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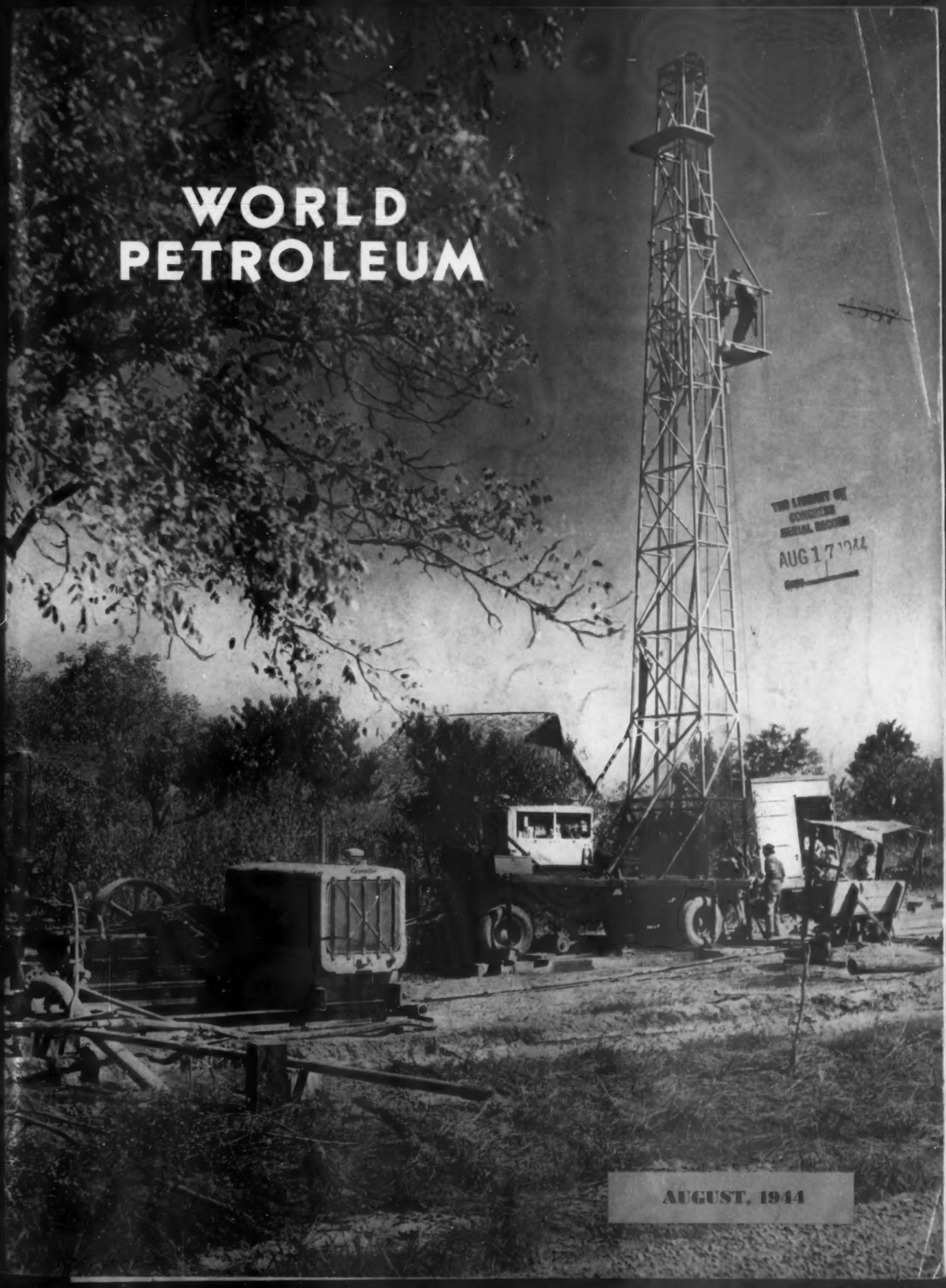

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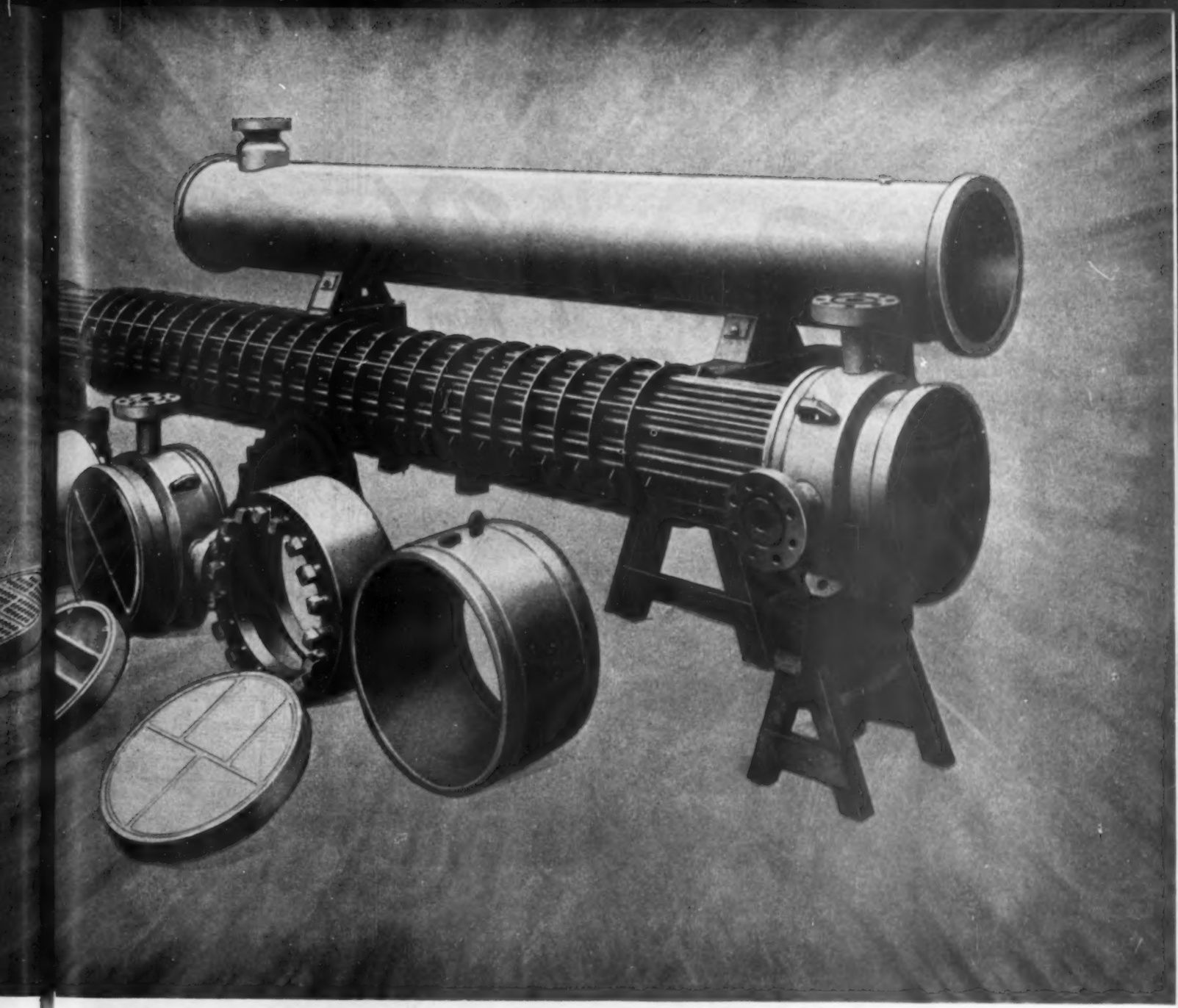

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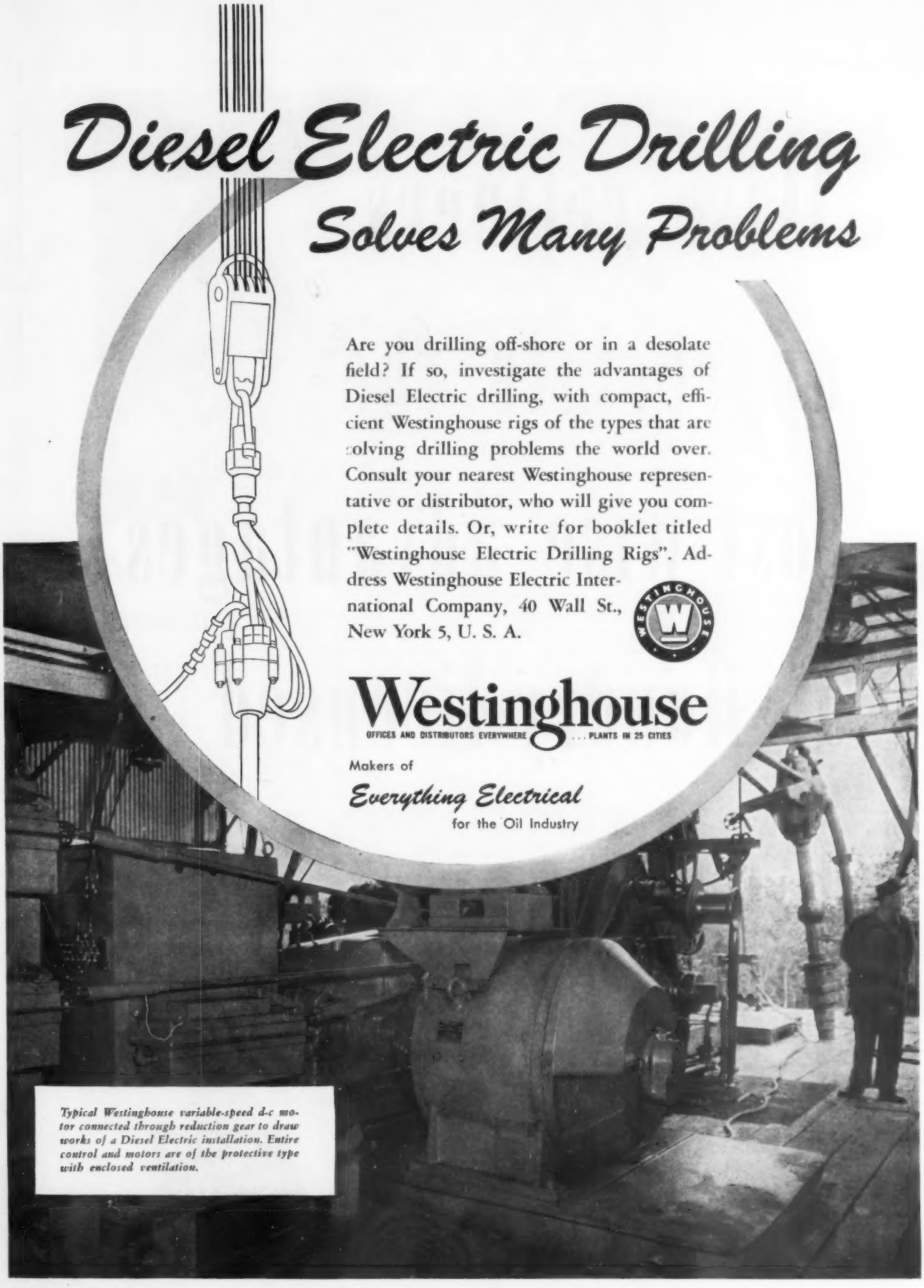

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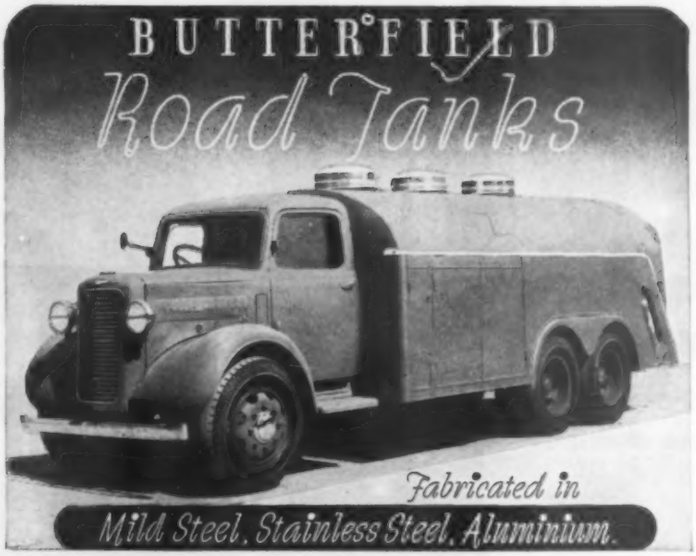

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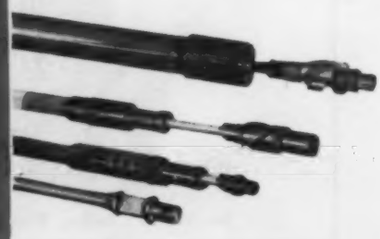

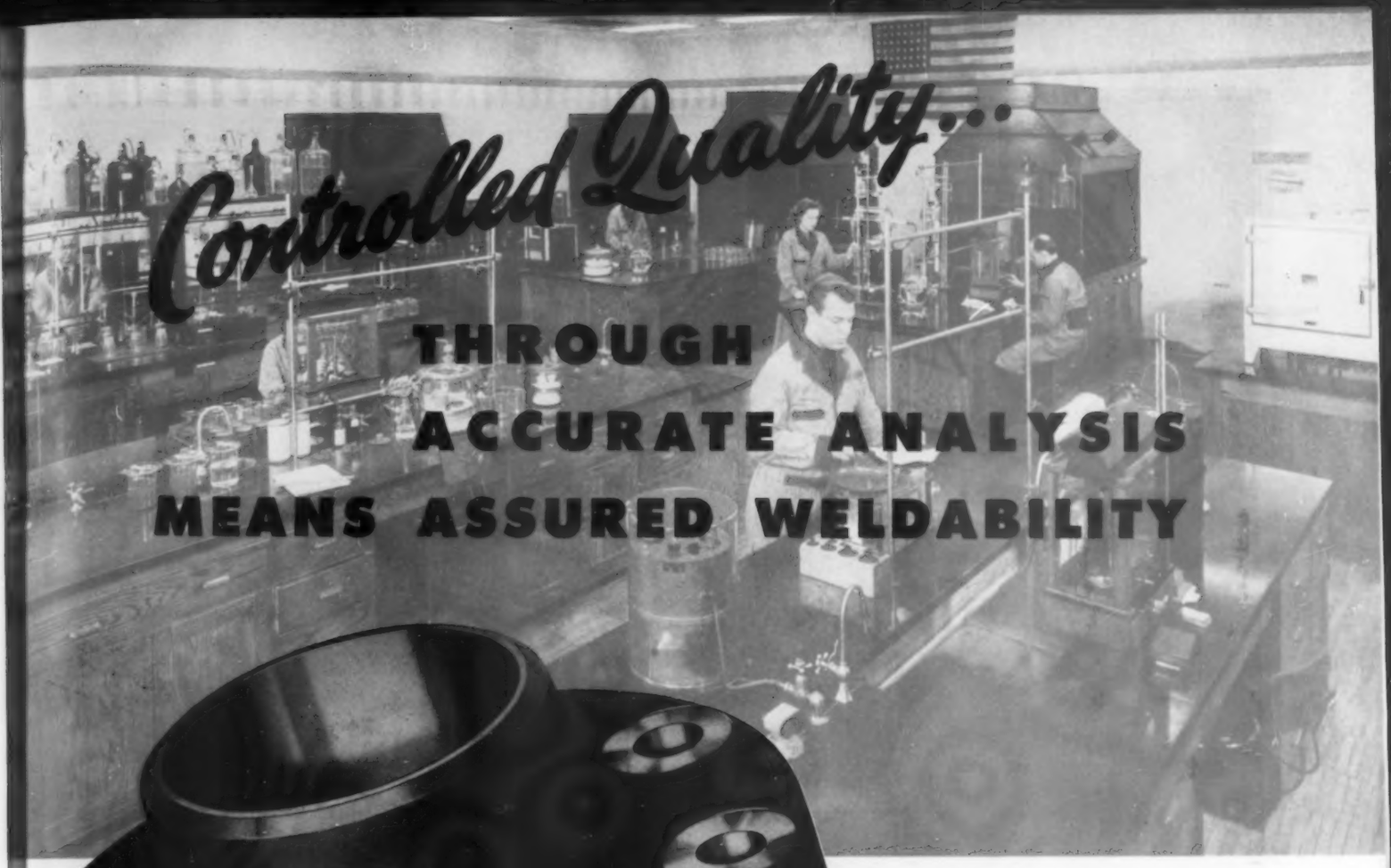

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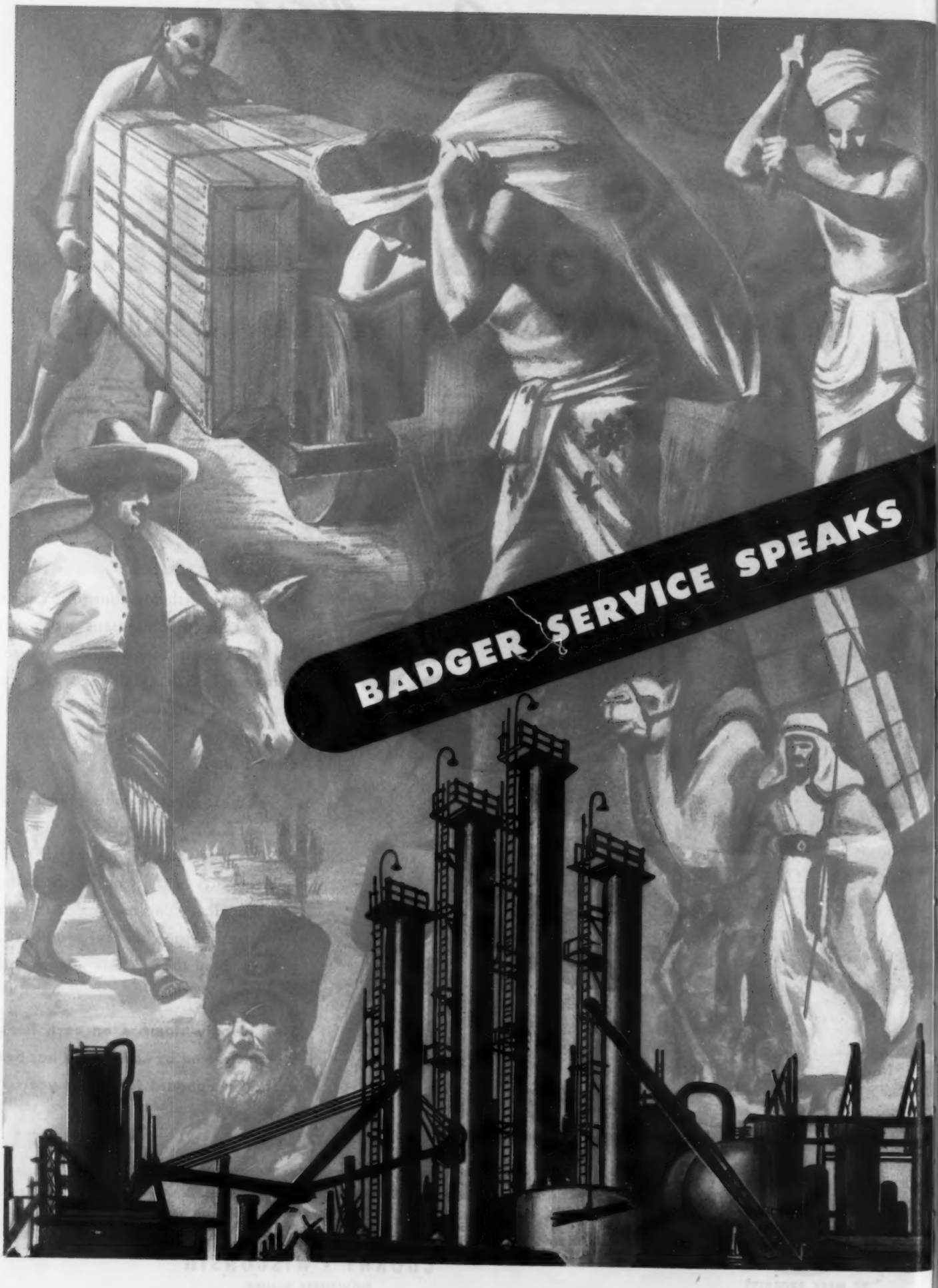
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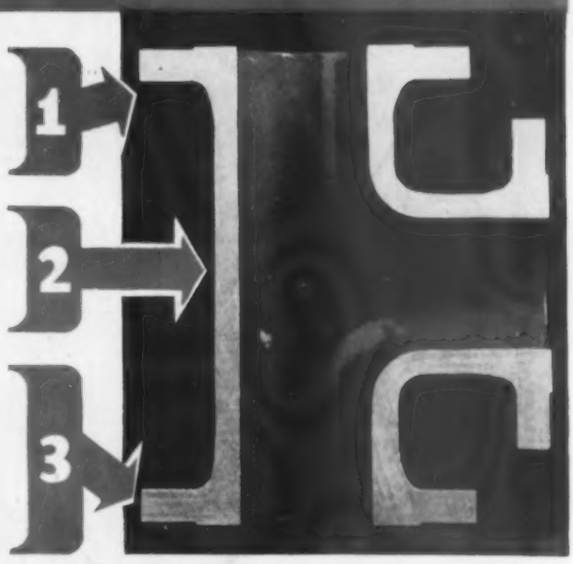

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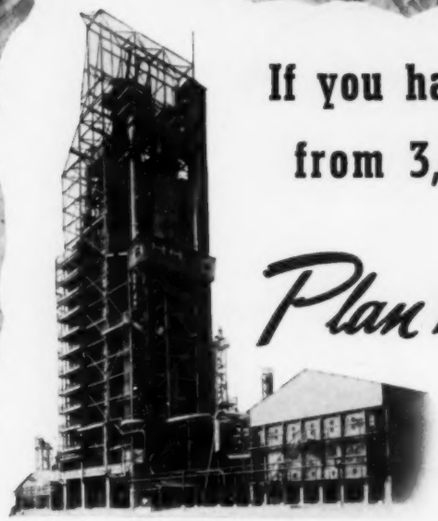

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THE MANAGEMENT PUBLICATION OF THE INTERNATIONAL PETROLEUM INDUSTRY

VOLUME 15 — AUGUST, 1944 — NUMBER 9

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BRANCH OFFICES: London: Georgian House, St. James, London, S. W. 1 • Mid-Continent Advertising Manager: O. F. Cozier, 415 McBirney Bldg., Tulsa 3, Okla. (Tel. 4-5555) • Mid-West Advertising Manager: Willard R. Cotton 307 No. Michigan Ave., Chicago 1, Ill. (Tel. Franklin 2508) • Michigan Manager: R. F. Pickrell, 314 Stephenson Bldg., Detroit 2 (Tel. Trinity 1-0790) • Cleveland Manager: Frank J. Enright, Union Commerce Bldg., Cleveland 14, Ohio (Tel. Main 5693)

EDITORIAL

INTERNATIONAL TRADE COMPACTS AND THEIR OPERATION

HIGHLIGHTED by the debate over the proposal for direct participation by the United States, through the government owned Petroleum Reserves Corporation, in oil development in the Middle East, the American public manifested a decided interest during the early months of this year in the two related subjects of the national oil policy to be adopted by their own government and the possibility of an international agreement to cover the movement of oil in world trade. Since the Arabian pipe line project has receded into the background popular discussion of these matters has died down but the questions involved are still being studied in official circles and by a number of representatives of the oil industry and are still deserving of popular attention.

In view of the very great importance, not only to those engaged in the oil business but to the future economic progress of the nation and the world at large, of the decisions that are finally to be reached it is desirable that all aspects of the matter be dealt with in open discussion in order that an informed public opinion may be developed. Only so can there be assurance that the consistent and orderly utilization of the world resources will be maintained.

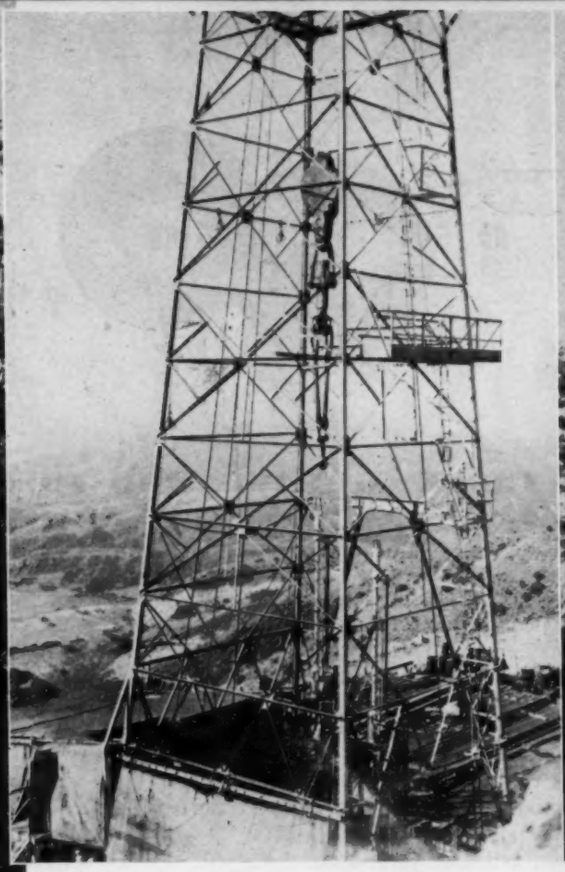
As background information useful in the consideration of this subject there is presented on other pages of this issue a brief outline of the organization and operation of international agreements applying to various world commodities which have been formed in recent years. The author does not maintain that any one of these conventions provides a model that may be followed in an international agreement relating to oil. Obviously each commodity must be treated according to the special conditions surrounding its production and distribution. They do serve, however, to indicate the lines that governments, acting for themselves or in conjunction with private interests, have taken in dealing with other trade problems.

As pointed out in the article referred to the eight international agreements that have been concluded in the past dozen years divide themselves into two classes. The conventions relating to tin, rubber, timber and tea, though concluded between governments, were directed primarily to the control of exports in order to maintain prices satisfactory to producers and exporters. They differed, therefore, in no material respect from cartels formed by private producing interests that have figured more or less prominently in other lines of international commerce. The other four agreements, concerning wheat, beef, sugar and coffee, have included both consuming and producing nations and interests. The writer of the article, who has given years of close study to cooperative trade agreements and is the author of a book on the subject, regards this type of agreement, particularly as exemplified in the sugar and coffee compacts, as representing a more constructive and acceptable approach.

All of these conventions, it will be observed, had their origin in the oversupply of markets during the depression years and were directed to remedying a competition deemed ruinous to producers. Control of prices, whether provided directly or indirectly through quota regulations governing exports, was established for the primary purpose of enabling producers to receive at least a living return from their efforts. Adherence of consuming countries, in the more advanced plans such as those applying to sugar and coffee, was obtained through their acceptance of the belief that a stable flow of these commodities at a fair price was preferable to wide fluctuations in supply and price and by the consideration that prosperity in the producing areas made them better markets for the goods manufactured for export by the consuming nations.

The oil industry has had its experiences of slack demand, cut-throat competition and disastrously low prices, but in the past these have been permitted, in the United States, to correct themselves through the opration of economic forces while in the outside world they frequently have led to understandings for the limitation of shipments to oversupplied markets. On the whole, the industry has managed to fend for itself with fair success and the project of an international oil convention is put forward not so much for the protection of producers as to insure an equitable distribution to consumers in accordance with their needs. If, however, the government of the United States is to participate in a world compact for the conservation and balanced distribution of oil products it must, in consistency revise its internal policy to permit such cooperation within the industry as will enable it to avoid economic wastes, attain optimum recovery from its reserves and promote the conservation of its own vital petroleum resources. This is the nub of a domestic policy that will conform to the kind of world agreement that has been proposed.

Oil Production on the California Coast.



Left: Fillmore Community No. 2-1. Deepest Well in California Drilled with International Combustion E
Center: Barnsdall's Roose No. 1 at Elevation of Approximately 3,200 feet.
Right: Phillips Petroleum Company's Test Well in Coos County, Oregon.

CALIFORNIA'S EXPLORATION COVERS WIDE RANG

By Nicholas A. D'Arcy, Jr.

PACIFIC Coast exploratory drilling has been carried on from the Salton Sea on the south to beyond the California-Oregon border on the north in an effort to increase production to a point where supply will equal present war-expanded demand. The magnitude of this task can better be understood when we realize that for the past year California crude petroleum stocks have been depleted at the rate of 100,000 barrels per day while California production increased to 800,000 barrels per day.

The search has been most intense for heavy crude and natural gas, both of which were held in low esteem in past years. Exploratory drilling has been carried on and discoveries made from sea level to the mountains, from sand dunes to orange groves and from grass roots to depths of almost 10,000 feet. The deepest well drilled in 1943-44 and the third deepest well ever drilled in California is an exploratory well.

The Salton Sea area of Imperial Valley is one of the large undeveloped and unproven fields of sedimentary rocks left in California. Several years ago a shallow exploratory well was drilled near the Chocolate Mountains and it is reported to have cored oil sands of approximately 35 degree gravity. This well did not prove to be a commercial producer but it attracted interest to the Imperial Valley area. Since that time surface geology and seismograph exploration ha indicated that good oil structures exist and s eral of the leading oil companies have lea large areas from northern Imperial Valley the Mexican border. The Pure Oil Compa was the first to rig up this year with contract doing the work. The Standard Oil Company California was next to start work with contra tors also doing the drilling. Standard has enco tered difficult transportation conditions due sand drifting over the field roads and stalli the trucks en route to the San Felipe Hi Early indications are that the effort was wo while as gas production has been reported.

The Phillips Petroleum Company entered Oreg for a test which proved to be a duster b which set many operators thinking and some acting on the possibilities of commercial production in that state. Although no comm cial oil wells are in active production pres indications are that soon at least one ma California oil company will start explorat work on large leases being accumulated.

Northern California has seen development the Eureka area near some of the earliest p ducing wells in the state. The old wells ha been inactive so long that most people do realize that the Eureka area was an early C fornia oil center.

Seaboard Oil Co. Park No. 1, Los Angeles, Soundproofed Electric Project.

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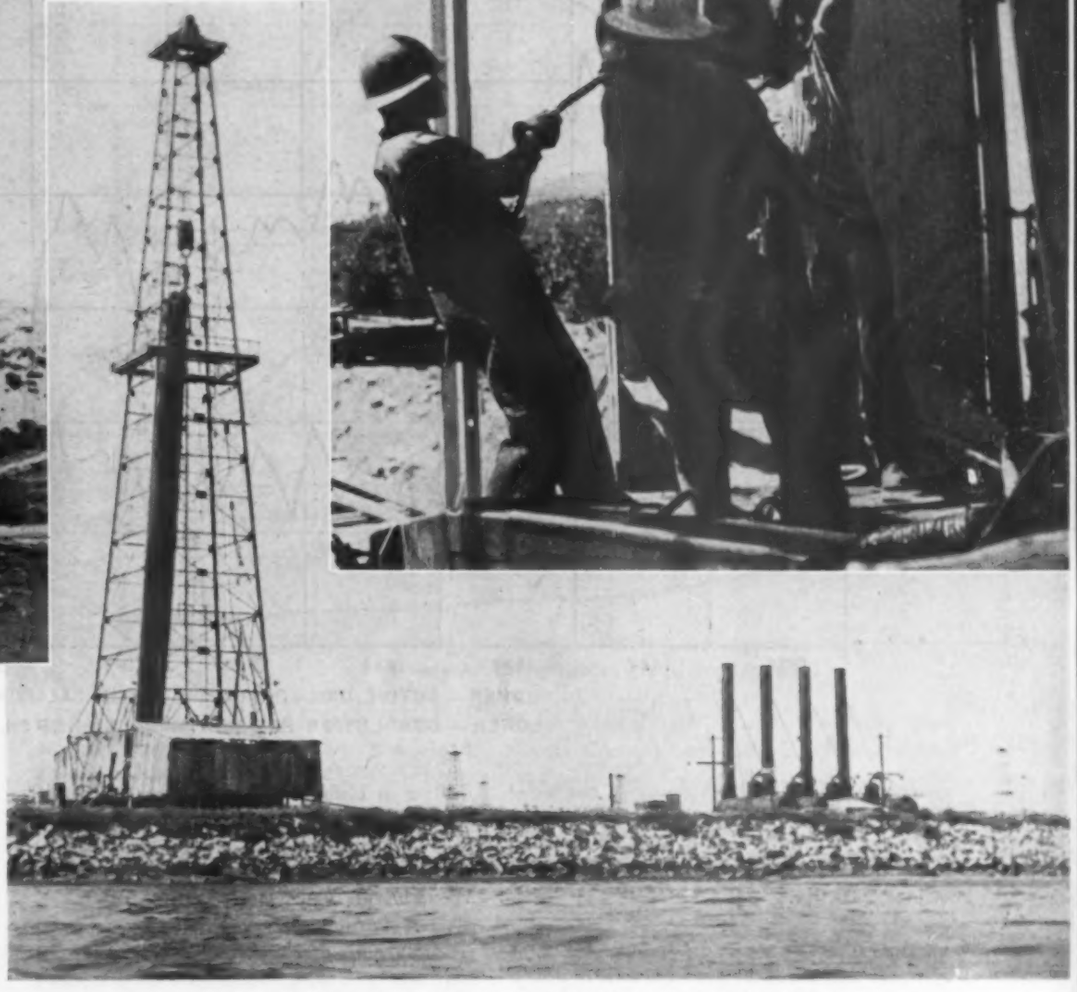
Ed and Harold Pauley's Loftus No 1, Discovery Well at El Segundo.

Right: Coming Out of the Hole at 14,500 Feet. California's Deepest Well Was a Wildcat.



Gilco State No. 1, 7,000 Feet of Hole Drilled with 5,000 Feet of Drift.

The extension of exploratory drilling for gas production into the far northern end of Sacramento Valley is another interesting development.

Natural gas is now an important constituent of synthetic rubber and 100 octane gasoline and as such is one of the most critical petroleum products. The butane in natural gas is blended direct with other products in 100 octane gasoline and butane is changed to butene and then polymerized to butadiene which when mixed with styrine makes Buna-S, our chief form of synthetic rubber. Many new war factories clamor for natural gas for heating and heat treating and as a result serious shortages have existed in the Los Angeles area and the San Francisco Bay area. Only a mild winter in 1943 prevented a critical shortage of natural gas.

In an effort to improve the supply of gas many exploratory gas wells have been drilled and 10 new gas fields have been discovered in 1943-1944 to date. Unfortunately, many of these are far from commercial pipe lines and therefore do not add to the immediate supply of commercial gas production. Thorton and Gill Ranch fields will probably be connected to commercial gas lines before the winter of 1944 and they will supplement Rio Vista in supplying the San Francisco area. They will also relieve some of the northern demand for Kettleman Hills gas and allow more of that supply to flow south.

Far more important than new discoveries of natural gas fields however have been the development of old supplies. The Rio Vista field has long been capable of producing approximately 100 million cubic feet per day more than the existing gas lines could handle. New lines to San Francisco are now nearing completion and that area can be assured of adequate gas this winter.

Los Angeles will be supplied an additional 65 million cubic feet of gas per day through the development of a de-hydration and compressor plant at Goleta with the necessary equipment and pipe lines to deliver this gas to Los Angeles.

The new gas fields are being developed to demonstrate their potential but as many are located in regions of comparatively light gas consumption it is doubtful if they will be connected to commercial gas lines until after the war.

For many years the California heavy crude oil producing fields had been dormant. Heavy demands for fuel oil to power our rapidly expanding merchant marine and heavy navy fighting craft brought these fields back to life.

Although true "wildcat" wells did little to increase production in this type of fields much drilling was done and many old field boundaries were greatly extended. Most of these fields produce from shallow (800 feet to 3500 feet) wells and very mobile equipment was used. The Belridge Oil Company, using a standard steel derrick mounted on tractor wheels and a light internal engine powered drawworks, completed 16 shallow wells in one month. Many other wells were completed in two to four days from spudding to spudding and the very number of completions added greatly to the production of heavy crude for fuel oil.

Sea level drilling has taken many forms and many angles One of the most interesting wells drilled at sea level assumed an angle of over 70 degrees and has been reported as the hole with the greatest ratio of drift to depth on record. This well is the Gilco, drilled on the mud flats at Seal Beach, between the proven field and Long Beach. This well, far from the breakers, has been drilled under a flood control

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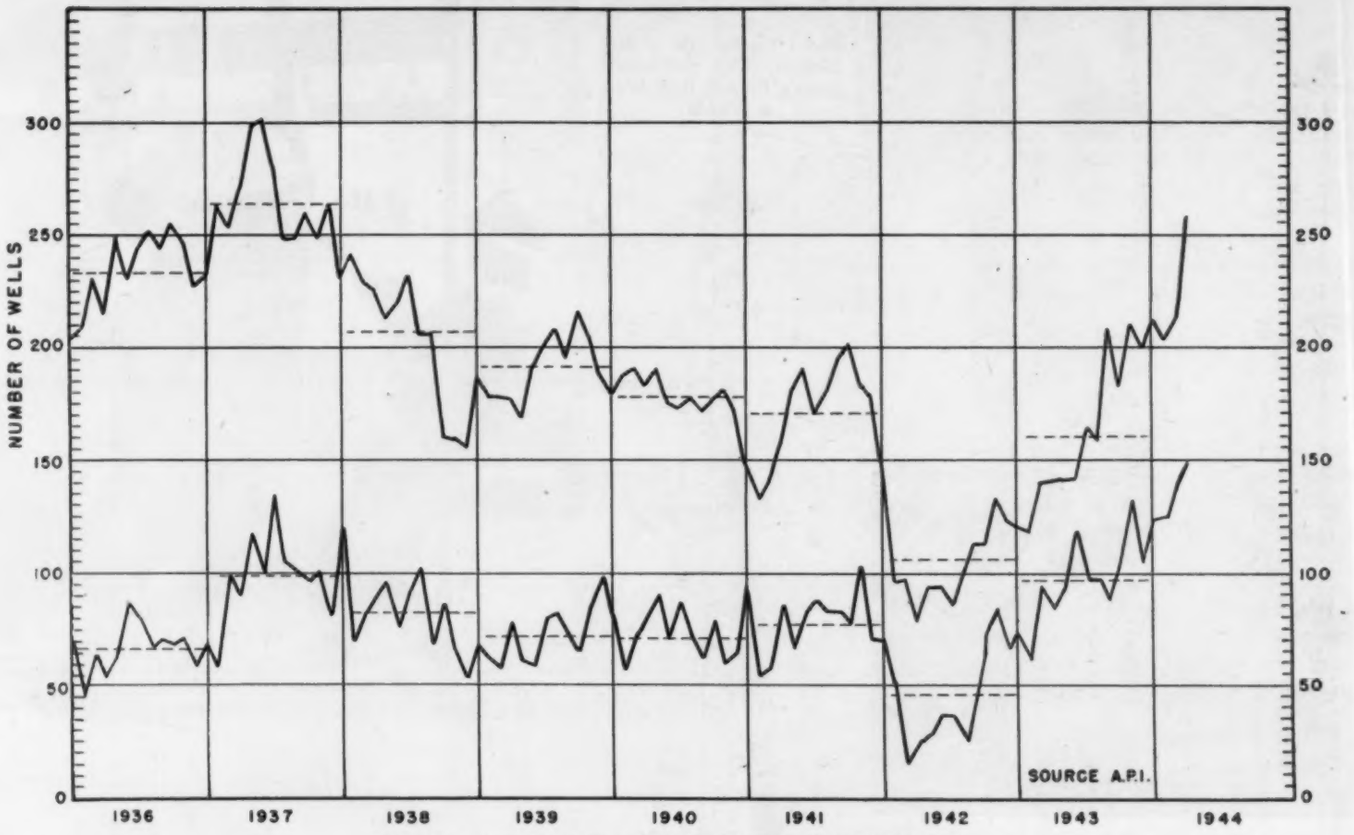


UPPER— ACTIVE DRILLING OIL WELLS IN CALIFORNIA
LOWER— COMPLETION PER MONTH PRODUCING OIL WELLS IN CALIFORNIA

channel, a railroad and a highway on out under the ocean. Only 7000 feet of hole was drilled and only 7000 feet of drill pipe was pulled each round trip although the well has a vertical drift of over 5000 feet.

D. W. Elliott's, Townsend Land Co. No. 1, at Newport Beach was the discovery well in a new sea level area. Several new oil producing zones were discovered in the Wilmington field by the Long Beach Oil Development Company and the Union Pacific Railroad.

The Continental Oil Company's completion of the Grubb No. 31 well into the second Grubb Zone marks a new discovery for San Miguelito. This is a prolific field of good quality oil and the discovery ranks high in the list of 1943-1944 completions.

Huntington Beach, with its heavy crude, is also active. Intensive drilling in this field assists the Standard Oil Company of California to live up to its program of completing at least one producing well for every day in the year. For the first five months Standard's average of a producer per day has been maintained and the extent of the Huntington Beach field has been greatly extended.

Off shore drilling has also come back to an active status. General Petroleum and Honolulu Oil Company are both drilling from piers at Ventura and Signal Oil and Gas is drilling from their pier at Elwood. This is the first pier drilling in California in several years although directional off-shore drilling has been active at Huntington Beach on state leased property.

Western Gulf Oil Company has the credit for exploratory drilling in 1944 from the greatest elevation but unfortunately their Brady No. 1 well was a duster. Barnsdall Oil Company's Roosa No. 1 and Standard Oil Company's Frew No. 1, both at an elevation of approximately 3200 feet, share the honor for the greatest elevation for a discovery well in 1943-1944. Neither of these wells has been officially completed but they have both made commercial tests and are possible extensions of the Tidewater Associated Oil Company Aliso Canyon field. A few of the nearby Tidewater Associated Oil Company wells in the Aliso Canyon field are the only producing oil wells in California having a greater elevation of drilling site.

Several other wells have been drilled from high elevations in search for oil in California. One of these was the deep test drilled to 10,313 feet by the Pacific Western-George F. Getty interests above Piru Creek. This well was drilled with electrical drilling equipment designed for shallow drilling. The only returns for the effort was a mass of geological information obtained from the cores. Several other companies drilled tests in the rugged area of Piru Creek in 1943-1944 with little to show for their efforts.

One of the "No Dope" wells of the past year was the Loftus No. 1 drilled by Ed and Harold Pauley at El Segundo. This well is in the lee of the huge sand dunes blown in from the sea shore and was a directional drilling job starting in the El Segundo city dumps and bottoming under the Los Angeles sewer farm. From the location and objective it is no wonder that this was a "No Dope" well. Although little information has been released it gives evidence of being a commercial well and as much may cause increased activity in the El Segundo area.

Standard Oil Company's deep test at Fillmore, drilled on the edge of a fine orange grove, is one of the outstanding wells of the past several years. This well was drilled to 14,512 feet before trouble developed and re-drilling was required. This is the third deepest well ever drilled in California and the deepest well ever drilled in California with internal combustion engines. Work has been in progress for over a year and drilling has been of the toughest nature. Barnsdall Oil Company also chose an orange grove as the site of their Sunny Hills well but they had better luck to date. This well resulted in a producer which lies almost mid-way between East and West Coyote fields and gives promise of considerable development in that area. The well has not yet been credited as a discovery well as it is not proven that the pool is not an extension of the Coyote fields.

The shallowest field, just over 1000 feet, discovered in California in recent months is the Kern Bluff field in San Joaquin County. This field was discovered by both Standard Oil Com-

pany and Shell Oil Company, Inc. Standard completed its well No. 2-10 several days ahead of Shell's Anafa Well No. 1 but both were given credit for the discovery due to the similarity of the work.

R. E. Havenstrite is drilling one of the interesting shallow wells. His well in the San Emidio area is near the old 75-foot deep mine shafts used in oil mining. These early mines produced pitch which was hoisted to the surface by means of a windlass and barrel.

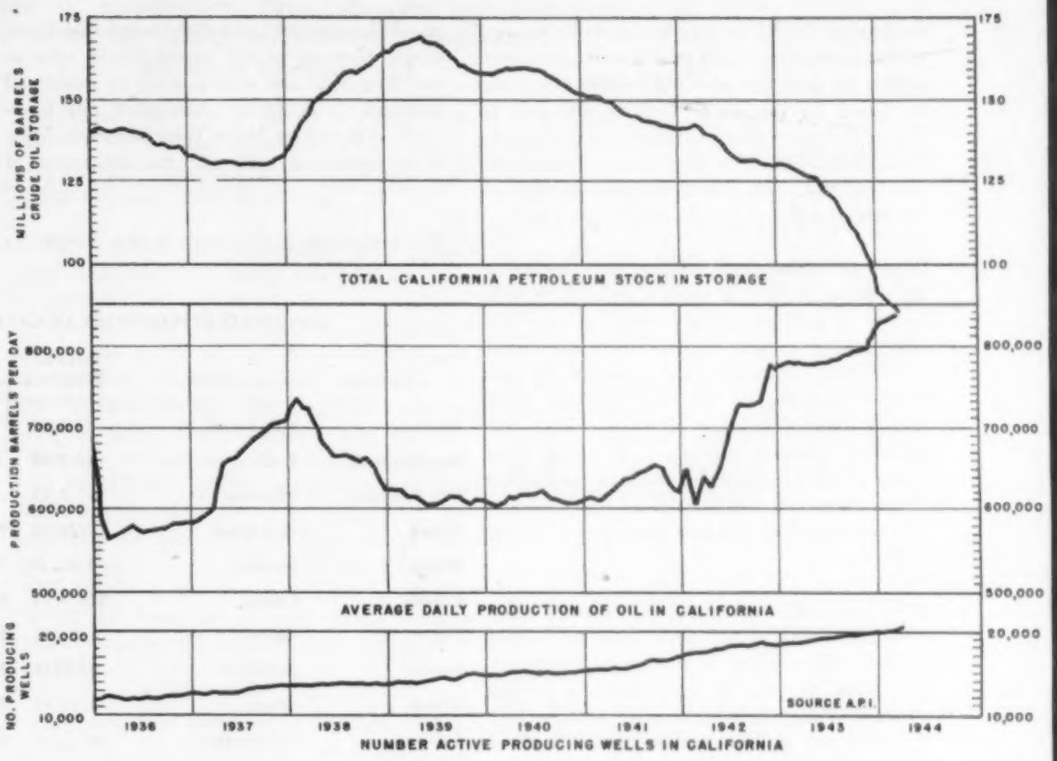
Many shallow fields have been very active and the Tidewater Associated Oil Company's North West Mountain View well gives promise of introducing an important addition to the potential shallow production.

As related Standard's Fillmore deep test is the deepest well drilled in recent months and the deepest wildcat since Honolulu drilled at Buena Vista in 1941.

R. E. Havenstrite gets the credit for discovering the deepest new pool with his Barnes No. 2 which opened the Bering Pool at Del Valle. Havenstrite was also successful in discovering the new DL4-DL5 zone in the East Del Valle field and thus has the credit for two discoveries in a single year.

Standard Oil Company's deep discovery at Pleasant Valley is considered by many to be the most important in the past eighteen months. It is producing from Eocene sands and some feel that it will rival the Coalinga extensions.

Superior Oil Company's Kreyenhagen No. 81-22, the discovery well of the Lanare field, Fresno County, and Standard Oil Company's Frew well at Aliso Canyon are the only other discoveries producing from below 9,000 feet. Richfield is drilling a promising well below 10,000 feet as an extension to the Greely field but no completion has been reported to date. Union Oil Company is also below 10,000 feet with their Howard and Smith deep test at Monttebello and a showing of oil sand is reported at that depth.

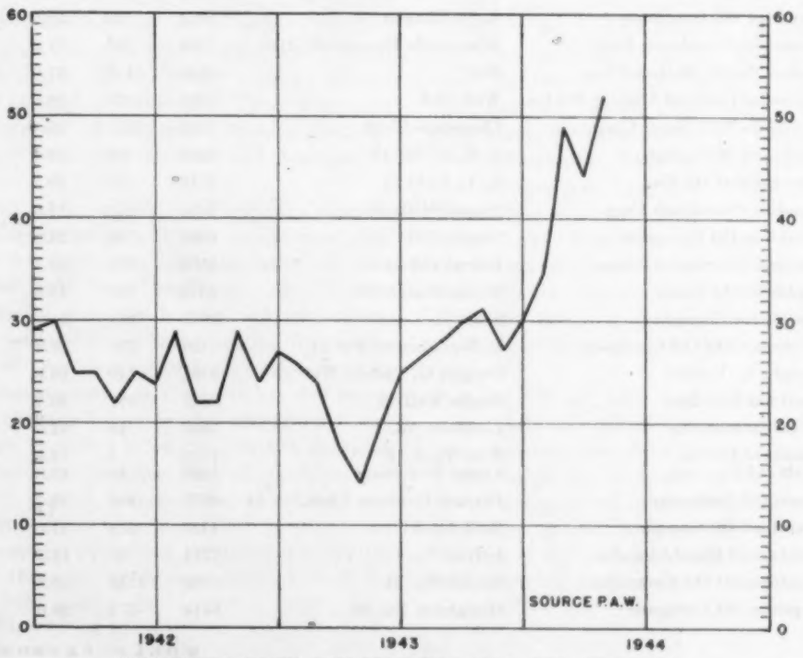


Although not of an exploratory nature the Paloma Unit Plan is a new venture for major California operators. Several companies, including Western Gulf, Union, Barnsdall, Ohio, Texas Company and General Petroleum have agreed to have Western Gulf handle the operations for the group and all share equitably in the production. Drilling is proceeding at an active rate and several wells have been completed. The new Paloma gas plant is one of the most important features for war production. A $3,000,000 gas re-cycling and condensing plant has been built as a part of the unit plan to control reservoir pressure. The condensate is a valuable source of butane required for 100 octane gasoline and synthetic rubber. This butane is shipped to the Los Angeles area refineries by pipe line.

No major oil pipe lines have been built in California although a 40-mile line connecting the Helm and Riverdale fields with East Coalinga is saving many truck miles formerly required for highway transportation.

Shell Oil Company, Inc. and Seaboard Oil Company both undertook drilling under severe conditions when they drilled their sound-proofed wells in Los Angeles. Local regulations required that the derrick and all machinery be made as noiseless as possible and the derrick and motor houses be further sound-proofed with insulating material. Shell's well at Gilmore Park was a duster which followed the fault most of the way down. Seaboard's well in Elysian Park has just been spudded in and no indication of success can be obtained yet. Both companies employed electric drilling equipment to eliminate exhaust noise and bulky boilers.

With the completion of the agreements regarding



CALIFORNIA ACTIVE EXPLORATORY WELLS (OIL AND GAS)

drilling the Naval Reserve at Elk Hills we can expect an additional 250 to 300 wells completed within the next year provided suitable crews can be found for the work. Drilling this field is one of the surest means of increasing production in California but unless more men and equipment can be put to work it will not materially add to the total number of completions for the year.

Although exploratory drilling has reached a high point for recent years California is still unable to produce enough crude to meet the requirements of war times. The crude stocks are at what is considered the minimum for continuous operation of the refineries and little hope is seen of bringing oil from outside into the state. Gasoline is bound to be scarce. Due to the scheduled completion of major gas projects before winter both Los Angeles and San Francisco can be assured of adequate natural gas for all vital needs.

The new fields discovered are smaller than those discovered in past flush years but several of them give promise of developing substantial production. Among the most promising are the Pleasant Valley field discovered by Standard Oil Company of California, Superior Oil Company's Lanare field and Continental Oil Company's discovery of the second Grubb zone at San Miguelito also give promise of substantial production. Tidewater Association Oil Company's discovery at North-West Mountain View is an interesting well and has indications of promise.

Much attention in California is now directed to the wells being drilled in Imperial Valley near Salton Sea as this is the last large area of suitable sedimentary deposits to remain undrilled in California.

With the many active exploratory wells drilling in almost every section of the state continued discoveries can be expected but their importance cannot be predicted.

GAS FIELD DISCOVERIES IN CALIFORNIA DURING 1943 AND TO JUNE 1944

County	Field	Date of Discovery	Company	Number of Wells	Potential Production
Madera	Gill Ranch	4/ 1/43	The Texas Company	5	30,000 MCF
San Joaquin	Lodi	4/ 3/43	Amerada Petroleum Co.	5	25,000 MCF
San Joaquin	Thorton	7/ 2/43	Amerada Petroleum Co.	4	27,000 MCF
Glenn	Ord Bend	8/24/43	Superior Oil Co.	3	12,000 MCF
Madera	Moffat	9/12/43	The Texas Company	1	6,000 MCF
Colusa	Colusa	12/ 6/43	General Petroleum Corp.	1	Not determ'd.
Butte	Chico	1/22/44	Richfield Oil Corp.	1	5,000 MCF
Fresno	Jacalitos	2/ 1/44	Standard Oil Co.	1	3,500 MCF
Glenn	Afton	2/13/44	Richfield Oil Corp.	1	6,000 MCF
Solano	Suisun Bay	4/ 7/44	Standard Oil Co.	1	5,000 MCF

NEW FIELDS, EXTENSIONS AND NEW POOLS IN OLD FIELDS DISCOVERED DURING 1943 AND TO JUNE, 1944 IN CALIFORNIA

FIELD	NEW FIELD, POOL OR EXTENSION	Date of Discovery	COMPANY	DISCOVERY WELL	Prod. Depth	Prod. Barrels Daily	Gravity of Oil	Cut
Del Valle East	Bering Pool	2/ 7/43	R. E. Havenstrite	Barnes #2	9629	1626	43.4	0.1%
Coalinga East	Pleasant Val. Eocene Pl.	2/16/43	Standard Oil Co. of Cal.	P. V. F. #82-29F	9151	780	28.3	2.5%
Bardsdale	Elkins Area	2/17/43	Los Nietos Company	Elkins #1	4919	125	29.1	3.0%
Cat Canyon Area	North Extension	2/19/43	Standard Oil Co. of Cal.	South Basin-Lloyd Comm. #1	4705	164	8.0	28%
Wilmington	IV Tar (New Zone)	3/30/43	Long Beach Oil Development Co.	"X" #14	2237	240	15.3	0.5%
Wilmington	III Tar (New Zone)	4/13/43	Long Beach Oil Development Co.	"W" #53	2531	50	13.8	4.4%
Newport Beach	New Field	5/18/43	D. W. Elliott	Townsend Land Co. #1	2408	50	13.6	1.0%
Lanare	New Field	5/25/43	Superior Oil Company	Kreyenhagen #81-22	6864	120	39.6	2.0%
Helm	Upper Temblor	5/30/43	Amerada Petroleum Corp.	Wheatville Ranche #F-21-8	7800	265	37.2	0.1%
Wilmington	III U. P. (New Zone)	6/21/43	Union Pacific Railroad Co.	E-37	4340	143	27.0	34.0%
Midway Maricopa	Section 6 (New Pool)	6/21/43	Chanslor Canfield Midway Oil Co.	Well 79-6	3452	475	20.5	3.8%
Riverdale	Eocene Pool	6/22/43	Amerada Petroleum Corp.	Clemente 52-22	7985	351	36.9	2.2%
Raisin City	Eocene Pool	8/2/43	Seaboard Oil Company	S. T. U. #53-14	6350	480	24.0	0.1%
McClung	New Field	9/ 3/43	Continental Oil Co.	K. C. L.-G #1	7518	253	29.7	4.6%
Round Mt. West	Extension (New Pool)	9/15/43	Bandini Petroleum Corp.	Signal-Mills #1	2435	174	14.8	3.8%
Del Valle West	Sterry (New Pool)	10/24/43	Bankline Oil Company	Sterry #101	4500	100	23.0	40.0%
Burrel	New Field	10/26/43	General Petroleum Corp.	Burrel #68-35	6503	339	31.7	1.0%
Tejon Ranch	New Field	11/ 1/43	Richfield Oil Corp.	Tejon Ranch #5	2372	194	18.0	6.0%
Arroyo Grande	New Zone	12/16/43	Los Nietos Company	Scott #1	3155	144	20.0	12.0%
Oak Canyon	Gilmour Pool	1/ 7/44	Western Gulf Oil Company	L. W. Gilmour Fee #1	5420	236	24.8	6.0%
Vedder	Vedder Pool	2/ 2/44	Dwight G. Vedder	Dwight G. Vedder Well #3	2462	148	16.0	14.0%
Rosecrans	Banks Miocene	2/ 4/44	Shell Oil Co., Inc.	Banks Well #2	8645	491	30.7	7.7%
Del Valle	DL-4; DL-5 Zone	2/12/44	R. E. Havenstrite	Liebhart No. 1	7668	46	43.0	4.0%
Kern Bluff		2/14/44	Standard Oil Co.	Well No. 2-10	1012	4	12.9	23.0%
		2/25/44	Shell Oil Co., Inc.	Afana Well No. 1	1035	16	13.0	13.0%
Potrero	Potrero No. 2 Zone	3/ 2/44	Basin Oil Company	Potrero Country Club No. 14	8978	165	34.7	3.0%
Buena Vista Hills	Section No. 27 Pool	3/22/44	Standard Oil Company	Well No. 54	4438	223	31.0	0.4%
El Segundo	West Area	3/26/44	Edwin and Harold Pauley	Loftus No. 1	7215	50	15.3	57.0%
San Miguelito	Second Grub Zone	4/12/44	Continental Oil Company	Grubb No. 31	7700	1538	30.5	1.3%
Bellview	Upper Stevens	5/10/44	Superior Oil Company	Houghton No. 36	6610	574	36.0	0.1%

VENEZUELAN EXPANSION UNDER NEW LAW

Official Publication of Concessions Paves Way for Increased Activity in Exploration and Development—Effect of Refining Requirement.

By Ruth Sheldon

FOR the first time in six years new concessions are now being granted to the oil companies in Venezuela providing a great spurt of activity and assuring large increases in production in the near future.

On June 21 the Official Gazette of the Venezuelan government began publishing the lists of concessions applied for by the various interested companies. The first published were those of Socony-Vacuum Oil Company covering 1,334,000 hectareas (approximately 2,934,800 acres) of exploration territory, the majority of which is located in the state of Barinas in southwestern Venezuela.

According to law a month must elapse before the machinery of granting these solicitudes goes into production. This formality is to ascertain if any valid reasons are publicly advanced as to whether the concessions should not be granted to the applicant—like the ministerial pause of "speak now or forever hold your peace".

The exact amount of concessions applied for is not known as each company has jealously guarded this secret. The total amount involved will probably be in excess of 10 million acres. The specific figure will be made public by the first part of September, which is the length of time estimated by government officials that it will take to publish the detailed applications.

One of the principal deterrents to a speedier announcement is the paper shortage as the publication of each solicitude is lengthy affair. The publication of the Socony-Vacuum solicitudes alone took one special issue of the Official Gazette.

Among the oil companies expecting to be granted considerable holdings are Creole (Standard Oil Company, (N. J.); Caribbean (Royal Dutch Shell); Mene Grande (Gulf); Sinclair Oil Company of Venezuela; Texas Company; Standard Oil of California; Atlantic Refining; Phillips Petroleum; Barnsdall and Amerada.

The oil companies anxiously have been awaiting this moment which will open up vast new territories for exploration and exploitation—as concessions will be granted not only on new exploration properties but on national reserves. The concessions are being applied for on the basis of more detailed geological information of the areas concerned than perhaps has ever before been the case before in the oil history of any foreign country. When the 1938 Venezuelan petroleum law was passed the oil companies considered that it contained features which prohibited desirable operation of their properties and no company applied for a concession under the law. However, intensive exploration work has been carried out during this six year lull. The new 1943 Venezuelan petroleum law which covers every concession, new and old, makes it possible for activity to be resumed.

This proof of the workability of the new petroleum law is warmly welcomed by both government and companies. Government income will be increased by the exploration and exploitation taxes to be paid by the companies upon receiving their concessions and development of new production will increase government revenue from royalties. The companies will be able substantially to increase their holdings in one of the world's most productive oil areas and they will now be able definitely to project their exploration and production programs on the basis of new concessions granted. The goal of 1,000,000 barrels a day Venezuelan oil production which was hoped for this year should, barring acute equipment difficulties, be more than realized in 1945.

The exploration programs of the various companies on these new lands undoubtedly will produce spectacular results within the next three years.

Only one serious difficulty has been encountered in the entire proceedings: the special requirements stipulated by the government as essential for the companies to accept in applying for national reserves. In publishing the lists of reserves which were opened for bids, the government stated that the concessionaire would be obliged to refine within the country 10 percent as a minimum of all oil produced from the concessions, unless he had already contracted or would contract to build modern refining facilities in the country. In addition, the remaining 90 percent could not be refined within a zone delineated by the Tropic of Cancer, the Equatorial Circle and meridians 50 and 90. This "forbidden zone" included practically the entire Caribbean area, even the Panama Canal zone, but principally affects the Standard Oil and Royal Dutch Shell refineries on Aruba and Curacao. These two refineries have long been a hairshirt to the Venezuelans who have objected to having the greater part of Venezuelan oil refined on the two tiny barren coral islands a few miles off the coast of Venezuela, under Dutch jurisdiction, with Venezuela receiving no benefits from the employment of its labor in the industry.

Standard Oil and Shell protested this condition and it was subsequently modified so that the concessionaire is permitted to substitute oil from other concessions to satisfy the conditions but the percentage of oil involved remains the same. The effect of this situation may be to shorten the lives of the two great refineries as they must draw their oil supplies either from concessions now under exploitation or from entirely new concessions which may not carry these restrictions as a requisite.

After their first protests Standard and Shell have remained silent on this question as they are obviously resigned to the fact that Venezuela oil policy is firm on the issue of Venezuelan oil being refined in Venezuela unless it is refined in the country where it is destined to be consumed. Official British comment has bowed to this policy in public statements that after the war refineries will be built in Great Britain for the refining of Venezuelan crude in the area of consumption.

Venezuela's point of view on the subject is defined in President Isaias Medina A.'s annual message to Congress delivered in April in which he said: "I signify to you that the policy of the government is firm in procuring refining in our own territory; all new concessions will carry the obligation of refining in Venezuela part of the mineral extracted from them; we do not wish to place ourselves in an intransigeant position in this respect without defending our own interests in search of new sources of work for the men who live under the protection of our laws; the petroleum of Venezuela ought to be refined in Venezuela or in such countries which are going to consume it in the form of refined products, but in no respect ought the material from new concessions to have a refining station outside Venezuelan territory in order to supply other markets".

The oil companies' financial situation concerning the granting of new concessions has been somewhat complicated due to the excess of dollars and the shortage of bolivars in Venezuela, a wartime condition brought about by the lack of shipping to handle the country's normal import and export requirements. The situation has been so acute that the companies and the government recently reached an agreement whereby the oil companies jointly, and on a pro rata basis, are allowed to purchase up to $5,000,000 in bolivars at Bs3.09 to the dollar (the commercial rate of exchange is Bs.3.35) and this sum is to be used to handle their existing operations in Venezuela.

Any sums in bolivars in excess of this amount which they may need must be obtained by borrowing on short term notes at three percent interest. Consequently, they must pay in this fashion their exploration and exploitation taxes obligatory in obtaining titles to new concessions. Although such a proposition would be eagerly taken up in most countries by banks and investment firms, the reverse may be true in Venezuela where far higher interest rates and returns are the custom.

(Continued on page 68)

Storage and Distributing Plant of Imperial Oil, Turner Valley (British Combine Photo).

CANADIAN OIL SEARCH TURNS TO NEW AREAS

By H. G. Cochrane

THE spotlight has been turned on Canada's Northwest these past few months. The final opening of the Canol refinery at Whitehorse early in May marked the completion of one of the swiftest and most spectacular oil developments in history. But behind this, outside of the glare of publicity, an army of geologists and drilling crews are engaged in a search for oil that may ultimately make Canada an oil exporting country on balance, instead of depending on imports for 80 percent of her petroleum.

Three years ago Canada was using nearly 60,000,000 bbl. of oil a year. About 17 percent of this was produced in Canada, practically all of it from Alberta's Turner Valley field. The yield from all Canadian sources had risen from 1-2 million barrels in 1936 to a peak of 10.4 million barrels in 1942, in spite of restrictions imposed by Alberta's conservation regulations. But consumption for air training, coupled with record farm production, resulted in a demand which even gasoline rationing for highway travel could not balance with supply. Oil had to be imported by hundreds of thousands of barrels.

The trouble was that new discoveries were failing to keep pace with depletion. Price boosts for oil of five cents a barrel in 1940 and from thirty to thirty-five cents in 1941 had helped, but under price control established in 1942 no higher prices were allowed that year. The 1942 budget reduced depletion allowance for income tax purposes from 25 to 20 percent. New wells; which in 1941 and 1942 had more than offset depletion, dropped to 24 for 1943 as against 41 to 1942. Even the further fourteen cent price increase posted in 1943 and the provision in the 1943 budget granting tax free return of capital, a 40 percent write-off on exploration and dry hole costs, and other tax concessions, including an upward revision of depletion allowance of 33.1/3 percent, have not encouraged drilling to the extent that new wells in 1944 will offset this year's depletion, for less than half a hundred are presently drilling in Turner Valley, not more than half of which are likely to be producers this year.

Turner Valley's production for 1942 averaged 27,800 barrels daily; for 1943 the average for the year was down to 26,500, while the all time peak production of 30,000 daily of February 1943 had dropped to 24,800 daily in December, and average daily production so far this year is less than 90 percent of the output for the same period of 1943. Even the threefold increase in production from other Alberta fields to date over last year, holds little promise of maintaining overall production. Dr. Theodore Link forecasts a further life of only eight years for Turner Valley. This year may show a drop from its 1942 average of 28,000 barrels daily down to around 21,000; next year may show less than half the peak, while by 1951, it may be down to 4000 barrels daily.

Further gas production increases may retard the decline. A conservation measure known as the "Weymouth Plan" was proposed last fall, whereby, for an expenditure of three million dollars, 120 billion additional feet of gas could be obtained from gas wells. From this gas isobutane, the blending agent necessary for production of high octane fuel, could be produced. Half a million barrels is the objective. Estimated benefits to producers and gas consumers would total fifteen million. Royalite oil is reported to be putting the consolidation phase of the plan into effect, pending its official implementation.

While other producing fields yield only between three and four percent of Alberta and Saskatchewan production, or around 15 percent of total western Canadian output if Canol is included, two of these smaller fields will bear watching. The Taber field a year ago had two producers. This year it has six producing wells and twelve more drilling; it will triple last year's rate of output when transportation problems are solved. The Vermillion field, with 34 producers compared with 13 in 1943, has a current output nine times that of a year ago, while all remaining prairie fields taken together have a current output two and a half times greater than the same month last year. Inclusive of Canol, Canadian 1944 production should equal the entire 1943 output. Without Canol, even the hoped for increases in newer prairie fields are unlikely to make up for Turner Valley's expected depletion. One difficulty has been limited refining capacity for the heavier oil from Vermillion and Taber.

Although prices and taxes are curtailing current production, exploration is continuing with undiminished vigor. Nineteen forty-three was a record year for activity in geological and geophysical investigation. All over Alberta and Saskatchewan this year exploration is again being pushed intensively. In no area are activities confined to one company. Imperial, Shell, Dominion, Gulf, British American, Standard of California, McColl-Frontenac, Anglo-Canadian and many smaller firms are taking a part in the hunt. An interesting recent development has been the filing on half a million acres in the Brazeau area 160 miles southwest of Edmonton, mostly by Imperial.

Canol has focused attention on the MacKenzie Basin. Had it not been for Japanese landings in the Aleutians in 1942 this area might have remained locked in Canada's frozen tundra for years. Oil was known to be there. Imperial brought in its discovery well at Norman back in 1919, but there was no demand for oil locally, and the Alberta Government refused permission in 1921 to pipe oil from the field into Edmonton, so it remained bottled up, until in 1932 activity in the Yellowknife gold fields and radium discoveries at Eldorado created a local demand, and a small refinery was set up to process the summer output of the three wells at Norman.

The story of "Canol" has been widely told. Early in 1942 approval was given by Canada for the U. S. War Department to explore for more oil, to drill further wells at Norman, to build a pipeline to carry an initial output of 3000 barrels to Whitehorse and to erect a refinery there. Later authority was asked and granted to extend exploration to find further sources capable of supporting an output many times this volume. Imperial Oil did the exploration and drilling, the army built the roads, brought in the pipe, and a four-inch pipe line was laid across the MacKenzie mountains. A used refinery was ob-

Transporting Tanks to Mackenzie Field. (Photo by National Film Board).

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tained at Corpus Christi, Texas, pulled apart, transported and set up at Whitehorse, and by April of this year the oil was flowing. Today the refinery is producing 500 barrels of aviation stock, 1000 barrels of motor gasoline and 750 barrels of fuel oil daily.

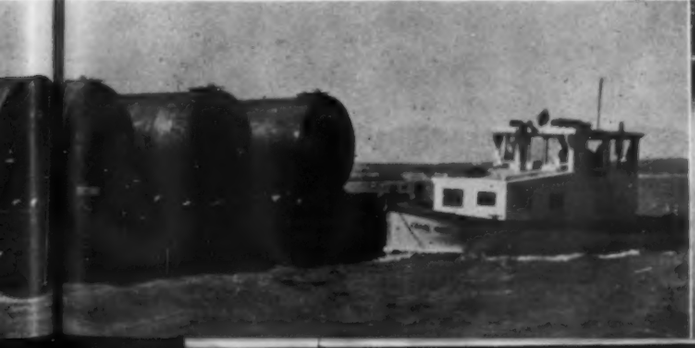
Subsequently, early in 1944, the U. S. Government informed Canada that the War Department now considered no military considerations existed necessitating an increase in the capacity of production, nor need for further drilling beyond that required to make up for normal depletion. They therefore suggested that further exploration be discontinued, and in return for what had been spent on exploration, improvements to transportation facilities and in drilling wells, that the War Department should be entitled after the war to an option to purchase 10 percent of the production from the proven area at Norman Wells, but not exceeding thirty million barrels, plus a further thirty million barrels from future discoveries in the MacKenzie basin, this to be taken at one fifth of current production, and subject to local requirements first being filled. This was agreed to early this year. In the meantime, Standard of California is operating the refinery for the duration, following which Canada may purchase it at an agreed price.

At the close of 1943 there were reported to be 37 wells drilled in all at Norman Wells, 27 of them producing by natural flow. Depths ranged from 1025 to 2700 feet, best flows coming from those to depths of 1300 to 1600 feet. Bottom hole pressures varied between 700 and 900 pounds. The oil is of a gravity of 38.4 with sulphur content of 0.55 percent by weight. It is of a paraffin base, with a pour point below 60°, and viscosities of 41.6 at 70°F, 143 at zero, and 525 at minus 30°. It is reported that the oil flows freely at temperatures down to 15°F. with the pipe uncovered, and while operation during the coldest weather during the past winter was not experienced to an extent from which definite conclusions could be made, it was believed that the heavy snow cover during the coldest months would protect the pipe and prevent oil temperatures from falling lower than 10° to 20°. Other authorities have reported the pour point at—40° and precipitation of the paraffin wax on the walls of the pipe at a temperature of—20°F., but they believe precipitation will occur only over the first 25 miles of line, which can be readily cleaned. The Norman field is believed to have a probable net accessible productive area of 4000 acres, and estimates of total recovery vary between 35 and 100 million barrels.

This present supply is sufficient for fueling current operations along the Alaska highway and air traffic over the "Northwest Staging Route", to Fairbanks. It is an insurance against lack of aircraft fuel in case the Japanese come back to the Aleutians. It can be of great help in the bombing of Japan. After the war, in the absence of cheaper supplies from other sources, it could support considerable air traffic to the Orient. But as it stands it is not a commercial operation. Expert witnesses at the hearings before the Truman Committee in Washington last winter, stated transportation costs from Norman to Whitehorse would be at least $1.00 a barrel without any amortization charges on the pipe line. Even writing off the cost of the pipeline over ten years would add something like $3.00 a barrel, which would add up to twice the cost of bringing a barrel by tanker from Los Angeles to Whitehorse.

The Canadian Department of Mines and Resources has therefore opened up a hundred million acres in the northwest territories for leasing on generous terms. Any applicant may file on two million acres, but must reduce this to one million within three years, and select a choice of 350,000 acres for development within six years. Imperial Oil, being the pioneer in this area, was the first oil operator to be interested; they have some advantage over other companies, having already spent nearly $2,000,000 of their own in the northwest territories on exploration and having been a party to the U. S. War Department exploration during the past two years. Announcement was made recently in the Canadian House of Commons that Imperial had made a deal with the government whereby it would conduct a search for a minimum marketable quantity, an output of around 30,000 barrels a day, requiring a reserve of some 300 million

Left: Survey Work in the Northwest. (Photo Courtesy Standard Oil Co. (N. J.)
Below: Drilling at Norman Wells (Photo National Film Board).



barrels to support it, and would spend $30,000,000 for exploration and development, and if oil was found, a further $60,000,000 for a 12-inch pipe to get it to tidewater.

The agreement with Imperial provides that the company is a party to Canada's undertaking for the postwar supply of oil to the U. S. War Department. All pipelines will be common carriers. Right of way is to be free. Canada gets a third of the oil from the proven area around Norman Wells, less the government's third share of development expense and less a 10 percent management fee. Royalties payable are five percent on Imperial's two-thirds share from the proven area, gradually ascending royalties on production from permitted areas starting from commencement of production, 7½ percent the first five years, 10 percent the next five years, 12½ percent thereafter. Canada also gets 10 percent of Imperial's net profits from permitted areas and $1.00 per acre per year rentals from the time production starts.

The deal has been criticized in the Canadian House of Commons as being too generous to the company. A very rough calculation based on probabilities indicates, however, that before payment of corporation taxes, Imperial might earn some $45 millions net before taxes, as against returns to the government in profits, royalties and rentals of around $30 to $40 millions. Based on present rates of taxation this operation might yield from fifteen to twenty additional millions in taxes over the life of the operation. Postwar taxation may be lower if the principle of incentive taxation is adopted, but assuming it to be $15 millions, Canada would receive $45 to $55 millions in profits, rentals royalties and taxes against a net return to Imperial after corporation taxes, of some $30 millions.

Moreover, the Dominion will be beneficiary from much additional taxation resulting from all the further development of the area which opening up of the country and development of the oil supply will make possible.

On the basis of royalties charged elsewhere, this income of $30 millions to Canada before taxes, might compare with $19 millions at Alaska royalty rates, anywhere from $17 to $45 millions at various Alberta rates, and $37.5 millions at average royalty rates current in the United States.

Were the government to attempt to do the job itself, the net returns might amount to $50 millions, but would probably be much less since there is no evidence from experience to date that government costs of production can compete with that of private enterprise. And if oil were not found in marketable quantities, Canada would stand to lose the $30 millions or so required for exploration.

As yet it is too early to predict with any certainty as to where this MacKenzie Basin oil will be marketed. Good surface showings are reported at Good Hope, 350 miles north of Norman Wells, around Ft. Simpson, and at Providence near the west end of Slave Lake. The logical outlet for the former if found in quantity would likely be Whitehorse and Skagway, while if Simpson or Providence turned out to be big fields, this might be piped 750 miles across the rugged mountain territory to Prince Rupert. From either point it could then be shipped by tanker to refineries in Vancouver or U. S. Pacific Coast cities. An alternative to the Prince Rupert route might be a pipeline 800 or 900 miles from Simpson or Providence to Edmonton.

But the proving up of reserves large enough to justify a 12 inch pipeline eight or nine hundred miles long is unlikely within three or four years time. In the meantime renewed efforts are being expended on the Athabaska tar sands. Here the federal government is taking a hand, has spent close to a million dollars already, and has lately announced the allotment of another half million. The Alberta government too is trying to reach a solution to the problems of commercial production, has recalled some of the scientific experts who worked on it before, and has appropriated a quarter of a million dollars for further research.

Realism here has replaced the previous optimistic ballyhoo which characterized earlier estimates of tar sand potentialities. Where it used to be fashionable to speak of output in terms of supplying the entire continent with oil from the tar sands for a hundred years, more sober predictions in terms of a fifteen year supply for Canada's needs alone are now being made. Only over two to five percent of the 1500 square mile tar sand area are conditions suitable for the open-cut methods for the removal of over-burden, which alone would permit economical production capable of competing with drilling methods elsewhere.

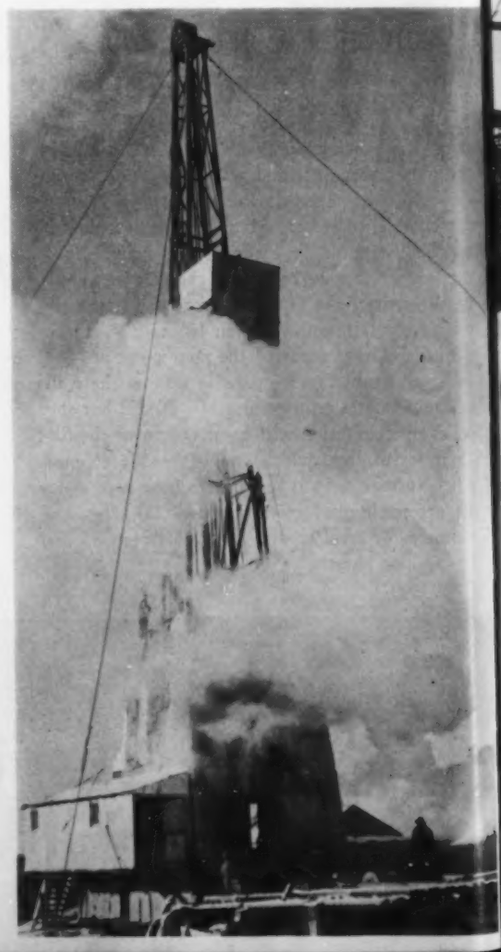
There still remain other problems to be solved, such as winter methods of mining, separation of bitumen from the sand, treatment after separation, removal of sulphur, disposal of overburden without the pollution of streams, and reasonable transportation costs. The product must travel from 20 to 60 miles to Waterways, from which the shortest airline distance to Edmonton is 250 miles.

In a recent announcement in the House of Commons, the Minister of Mines and Resources stated that the new extraction and separation plant would commence operations on June 1, while the refining plant would start about September 1. This plant has a capacity of 600 tons of tarsands daily, and can produce a barrel of oil from a ton of tarsand. From this extracted crude can be obtained 22 percent by volume of aviation gasoline of 100 octane rating, 17 percent motor fuel of 74 octane rating and 16½ percent of the cheaper fuel oils. Some uses may be found for the residue.

To make this possible as a commercial undertaking of sufficient magnitude to warrant piping the oil from Edmonton would probably require an output of between ten and twenty thousand barrels daily, and use for the residual products would have to be assured. If, however, such a supply found its way to Edmonton there is little likelihood of MacKenzie oil ever being piped there.

Indeed, many oilmen feel that Prince Rupert is the logical outlet for oil from the southern part of the MacKenzie Basin in any event. They point out it is too far to pipe oil to existing Calgary refineries, and rather than move them to Edmonton, it would be better to railhaul Montana oil into Calgary to supply the balance of what is needed to fuel the prairies after Turner Valley goes dry. Montana, incidentally, is experiencing a shortage of its own just now. Economics, rather than geography, of course, is the determining factor. For instance, dollar oil at Wellhead, in the MacKenzie Basin, with say from forty to fifty cents a barrel pipeline costs to Prince Rupert, might have difficulty competing with foreign oil even as far north as Vancouver under peacetime conditions. Yet if refined at the tidewater end of the pipeline, the products might compete with other sources at Vancouver, and in Alaska, and the balance not needed there might even compete with Dutch East Indies petroleum products at Vladivostock. On the other hand, in the event of Turner Valley drying up it would probably have stiff competition at Calgary from Montana oil unless there was a pro-

Winter Drilling at Norman Wells (Photo Courtesy Standard Oil Co. (N. J.)

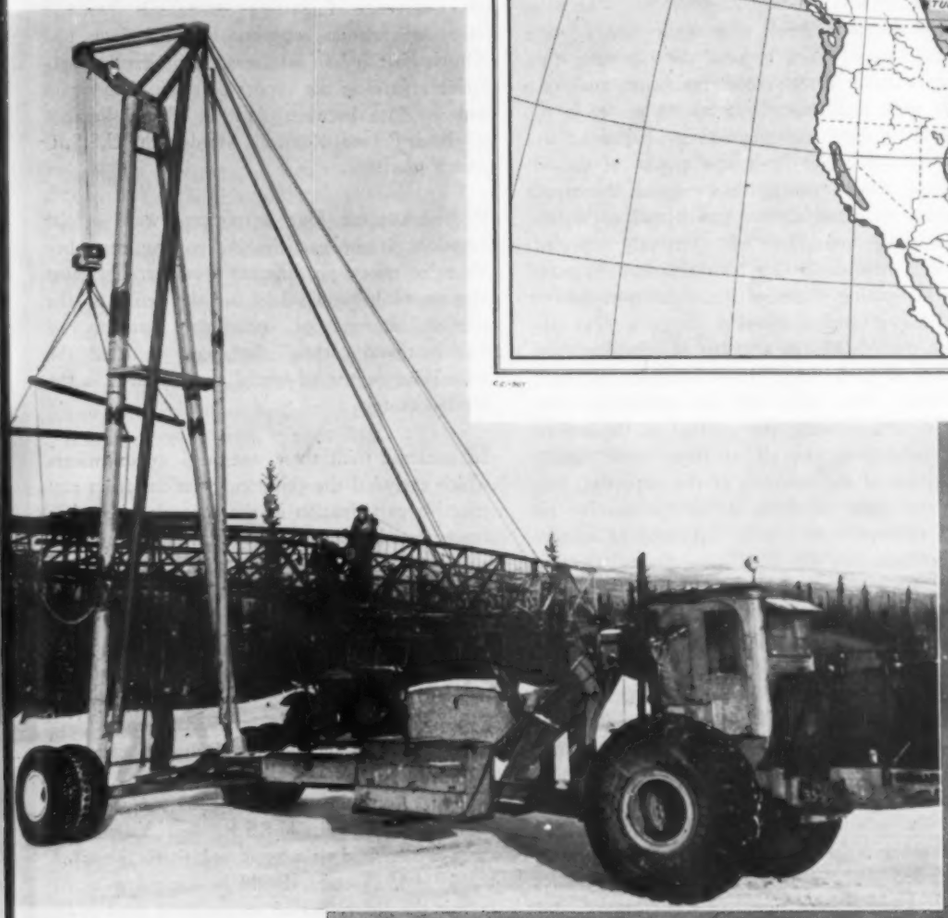


tective tariff, and Canada can ill afford a h'g'
tariff on petroleum products.

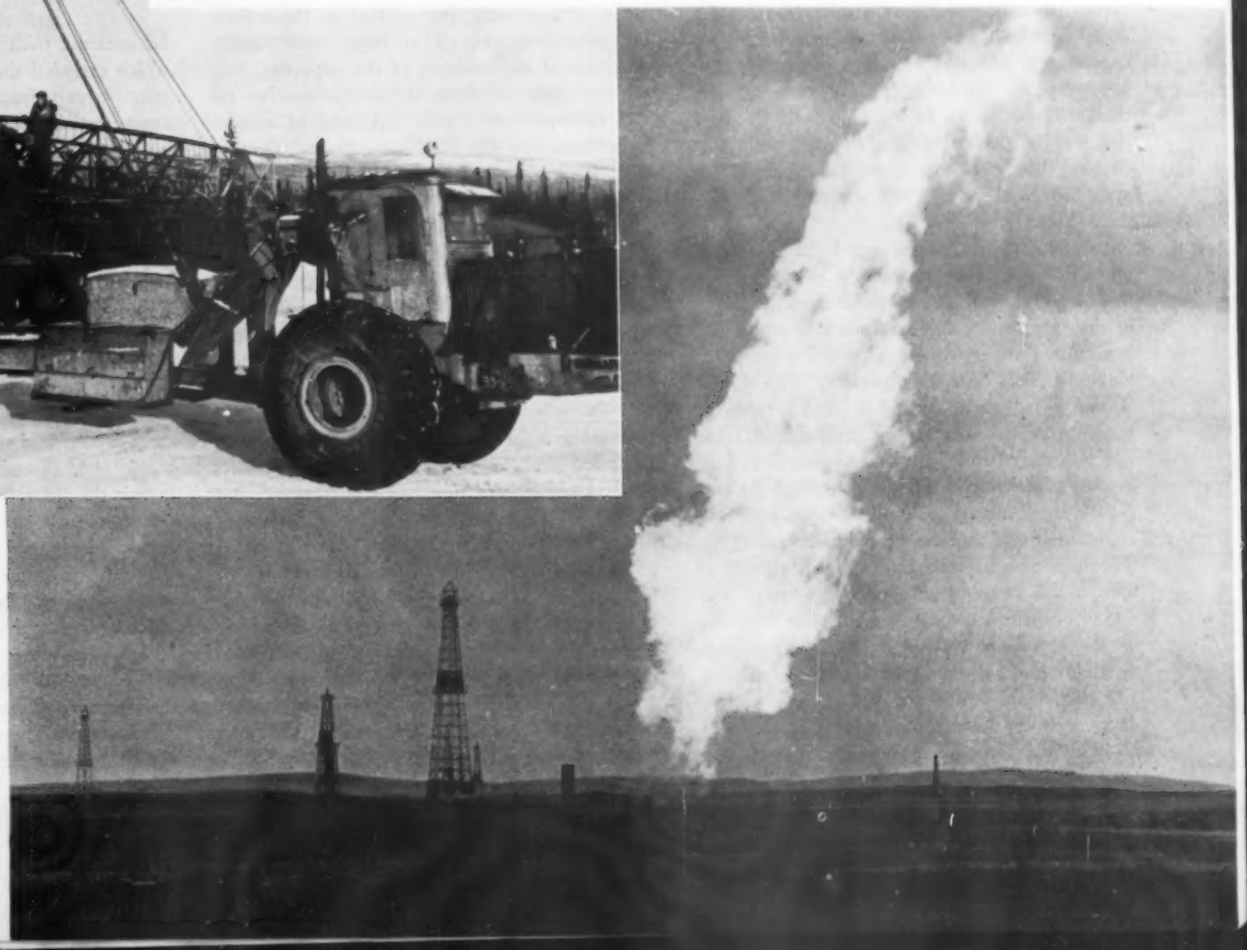
In broad outline, however, here is the picture: Today oil supplies are short. Though they may be temporarily plentiful after Germany is beaten, a position of scarcity will likely return when auto manufacturing is in full swing again.

There is promise of a vast supply in the north, and an intense hunt for it is on. Discoveries won't be quite in the most ideal locations, but Canada needs oil badly. This northern oil is not going to lie much longer untouched under the frozen muskeg in the MacKenzie Valley.

Right: Potential Oil Areas of Canada and U. S.



Above: Portable Drilling Rig in Northern Canada. (Photo Courtesy Standard Oil Co. (N. J).



Right: Burning Off Oil Flare in Turner Valley Field. (British Combine Photo).

BACKGROUND FOR OIL COMPACT

By Dr. O. W. Willcox

A Survey of Existing International Commodity Controls Suggests Broad Lines for a Petroleum Agreement Under the Joint Administration of Producing and Consuming Interests.

A GREAT amount of discussion has gone on in the past several months regarding the question of an oil compact among nations following the war and the closely related subject of the national oil policy to be followed by the United States. Studies relating to both these important matters are continuing both in official quarters and among members of the oil industry. Much more debate is inevitable and desirable before a final decision is reached.

Thus far the most definite and specific proposal for a world convention applying to oil that has come before the public is the one put foward originally by the Foreign Operations Committee and subsequently approved as to its main features by the special committee on national oil policy set up by the Petroleum Industry War Council. In essence it favors the establishment of an oil compact among nations resembling in form and functions the Interstate Oil Compact Commission now existing in the United States.

The Committee has pointed out that the combined domestic and foreign oil reserves held by United States nationals now constitute a smaller proportion of the world's reserves than the ratio of our consumption of oil to total world consumption. In other words, the United States, long an oil exporter on balance, may face a significant change in its status in the not-distant future. Evidence points to a shift from a condition in which this country has surplus oil for export to a condition in which the nation will become a net importer of oil. This expected change is not likely to come immediately after the war but when it does it will make the economy of the United States partly dependent upon foreign oil resources.

Such being the case, it is urged that a foreign oil policy should be established to assure that this country shall have equitable participation in the exploration, development, production and distribution of the world's oil reserves, wherever they may be. Special cooperation with Great Britain is suggested, because a large part of the known reserves involved in international trade are owned, controlled or under concessions held by American and British nationals, and the two governments should take the lead in achieving an international agreement on basic principles. The international compact suggested should be open to adherence by all countries, whether producers of oil or consumers of oil. The objective of the agreement should include the equitable distribution of oil among all consuming nations, and particularly to assure efficient and orderly development of these reserves so as to balance supply with the needs for oil.

Since the concept of "equitable distribution of the world's oil reserves" clearly points to some form of international control of this important commodity, it will be pertinent to survey the world's previous and current experience with international commodity controls.

Agreement among a plurality of nations to control international trade in a basic commodity is a comparatively new idea. There are now, or were up to the outbreak of World War II, eight such agreements, and most of them came into existence within the period 1931-1937. They all took their origin out of the economic collapse of the great depression, when large surplus stocks of basic commodities hung over world markets and depressed the prices of these commodities to levels that were ruinous in a double sense—first, because the exporting producers could scarcely cover their costs and were left with little margin of buying power in the world markets for manufactured goods; and secondly, because the buying power of the exporting countries being thus reduced, the export market for manufactured goods produced by the consuming countries was seriously affected. Under these conditions both the producing and the consuming countries felt a common interest in raising and stabilizing the prices of the basic commodities as a means of restoring prosperity to both sides. It is necessary to state, however, that while all the agreements were aimed at improving the position of the exporting producers, not all of them were equally solicitous of the interests of the importing consumers; some of them, as in the case of tin and rubber, were frankly operated to squeeze large consumers like the United States.

The eight existing or dormant agreements concern tin, wheat, tea, rubber, timber, sugar, beef and coffee. The United States is a party to the wheat, sugar, and coffee agreements. The tin agreement was entered into between the governments of Malaya, Bolivia, the Netherlands East Indies, and Nigeria with the avowed purpose of securing a fair and reasonable balance between production and consumption, and of preventing rapid and severe oscillations of price. Each producing country was assigned a production quota in proportion to its importance, and respect for these quotas was enforced by appropriate legislation in each country. Administration of the scheme was entrusted to a Committee of the producers. A sop was thrown to the consumers in the form of the privilege of appointing representatives to tender "advice" to the committee, but these advisers were denied voting power. By controlling the volume of exports the price of tin could be regulated to the satisfaction of the producers.

The rubber agreement was entered into between the governments of France, Great Britain, India, the Netherlands and Siam with the object of reducing world stocks to a "normal" level and maintaining "fair and equitable prices". Export quotas were allocated to each area, and respect for the quotas was enforced by local legislation. Administration of the agreement was entrusted to a committee of the producers. The manufacturers of rubber goods were invited to constitute a panel to offer advice on such matters as world stocks and quotas, but this panel was given no voting power. As in the case of tin, the export rubber quotas and exports were managed so as to establish prices satisfactory to the exporters. Equal neglect of the interests of importing countries is shown in two agreements between British-Indian and Dutch East Indian tea areas. A similar arrangement regarding the export of sawn timber was entered into between Austria, Czechoslovakia, Finland, Poland, Romania, Sweden, the U.S.S.R. and Yugoslavia.

Although these four agreements were official creations of the participating governments they were, in effect, no different from arrangements engineered by and solely for the benfit of the private interests of individual members of "international cartels" that have incurred the unbending enmity of official trust busters in the United States.

In contrast with these one-sided arrangements which excluded the consuming nations from any effective participation in the controls, the other agreements have taken in the consuming nations on a basis that has protected them from gouging and has given a real meaning to "fair and equitable prices".

The first international commodity control to which the United States became a party related to wheat. In a meeting in 1933 wherein Germany, Austria, Belgium, Bulgaria, France, Great Britain, Greece, Hungary, Ireland, Italy, Poland, Romania, Spain, Sweden, Czechoslovakia, Switzerland, U.S.S.R. and Yugoslavia were represented, it was agreed that exports of the 1934-1935 crops should be limited so as to permit the absorption of accumulated stocks. In this agreement the exporting countries accepted export quotas that in the aggregate would equal the estimated import demand. The importing countries agreed to the maintenance of a minimum basic world price of 63.02 gold cents per bushel, plus whatever tariff an importing country might maintain; they promised to lower their tariffs wherever they found it possible to do so and not to encourage any increase of their domestic production of wheat. The agreement

was to be administered by a Wheat Advisory Committee on which all interests were represented. This agreement was the first instance of recognition of the necessity of giving the importing countries equal voice with the exporting countries. It also marks the appearance of the concept that consuming nations, by agreeing to pay remunerative prices to the exporters, are improving their own positions as exporters of manufactured goods. In these respects the new type of inter-governmental commodity control has sloughed off the more or less sinister implications of private cartels.

The 1933 wheat agreement lapsed by autolimitation, but in 1942 officials of Argentina, Australia, Canada and the United States as exporting countries, and the United Kingdom as an importing country, agreed upon a Draft Wheat Convention to be put into international operation when the current war is over. It is agreed that six months after none of the five nations is engaged in hostilities the four exporting countries will accept export quotas in the proportions, 25, 19, 40 and 16 percent, respectively, of the estimated total volume of international trade in wheat and flour in each quota year. The agreement will be administered by a Council consisting of delegates of each contracting government. The Council will fix and publish basic minimum and maximum prices based on prices established for wheat c.i.f. United Kingdom ports, subject to revision to meet substantial changes in freight and exchange. These prices shall be such as, in the opinion of the Council, will be: (a) sufficient to provide a reasonable return to producers (b) fair to consumers in importing countries, and (c) in reasonable relation to prices of other commodities.

This agreement is notable for the part assigned to the importing country. The United Kingdom, which is at present the one importing country in this tentative 5-country agreement, undertakes to keep account of imports from the four exporting countries and to refuse entry to imports in excess of quota. As stated, the five countries will put into operation the scheme among themselves after the war and invite adherence by any and all other nations interested in the wheat trade. The possibility of refusal of some exporting nations to adhere is taken into consideration. Such nations, not accepting wheat quotas, will be denied access to the markets of the United Kingdom and of other consuming nations that have adhered.

The beef agreement is an arrangement between the governments of Great Britain, Australia, New Zealand, Ireland, Argentine Republic, Brazil and Uruguay regarding the total quantities of beef to be exported to the United Kingdom and the proportions of these totals to be exported from each country. The text does not mention any measures for price control.

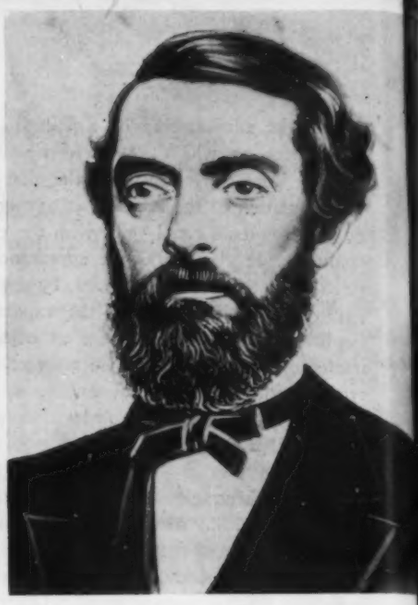
There remain for consideration the International Sugar Agreement and the Inter-American Coffee Agreement. These two agreements, and especially, the coffee agreement, carry the idea of inter-government commodity control to greater lengths than any of the others.

The sugar agreement was signed in 1937, by the governments of 17 exporting nations and four importing nations, the latter consisting of Great Britain, United States, India and China. As usual, the object of the agreement was to provide for the absorption of an enormous surplus stock and to take measures that would prevent further excess production. To this effect each exporting country accepted a quota in proportion to its previous production record, the actual quotas being limited to an aggregate amount equal to the estimated demand for export sugar. An International Sugar Council was created to administer the quota scheme. In accordance with the new and more enlightened spirit now animating these agreements, the importing countries were given an effective voice in the Council which enables them to counter any attempt on the part of the exporters to manipulate exports so as to create artificial scarcity. In return for assurance of ample supplies, the importing countries readily consented to the scheme, which had for its primary object to establish equitable participation of all producing exporters in the world sugar market at prices that were remunerative. Because they realized that the prosperity of producers is necessary to the prosperity of consumers, the importing countries were willing to permit an increase of the previous low price of a necessary foodstuff. The prevalence of this same concept in other international compacts is evidence of a dawning perception that low competitive prices, as such, are not necessarily beneficial to consumers.

No attempt was made to set the world price of sugar at a definite figure, the idea being that if production and consumption were made equal, the price of itself would rise to a "normal" level. The International Sugar Agreement is especially notable as the capstone of the most highly developed system of planned, or rather of directed economy, which the world has yet produced. Proration of production, with more thoroughgoing control of price than has ever been attempted in any international agreement except in the latest coffee agreement mentioned below, is commonplace in the national sugar industries of more than 30 countries distributed all over the earth. As with many other basic commodities during the great depression the price of sugar, both on national and international markets, fell to bankrupt levels. Out of the sheer necessity of saving their national sugar industries from complete collapse the governments of many of these countries permitted their sugar producers to form national associations enclosing every existing enterprise, large or small, efficient or marginal, within the country's industry. The national association was allowed to set up a central agency of the industry which distributed a proportional quota to every producer, thus assuring him of a share in whatever market there might be for sugar. This done, the association and the government agreed on a retail price for sugar that would be sufficient to preserve the industry as a whole, on the principle that the national consumers would gain more by preserving all the sugar enterprises as continuing foci of production, employment and buying power than they would lose from the necessary high price. Though the national governments could thus control production and price within the national boundaries they had no control over the international market. That was settled, as we have seen, by the International Sugar Agreement, which adopted the principle of assigned quotas with indirect maintenance of a remunerative price. Thus the world sugar industry presents an example of a globe-embracing economic unit, in which every individual element, from the lowliest producer to the most powerful nation, has an assured position that is in equitable balance with every other element, including the consuming elements.

It may be noted that the Hitlerite eruption has practically suspended the functions of the International Sugar Council. A skeleton organization is still maintained by the countries not dominated by the Axis, ready, like the wheat convention, to resume when the war is over. This idea of complete integration of a basic world industry, nationally and internationally, is repeated in the Inter-American Coffee Agreement between the United States and the fourteen Central and South American and West Indian Countries that produce coffee. The proposition was fostered by the government of the United States (the principal consuming nation) as part of the American "good neighbor policy", which is, more or less, designed to promote good business as well as good feelings. It was postulated that good business would result to exporters of American goods if the Latin Americans found themselves with more dollars in their pockets. They would have more dollars if they could get better prices for their coffee on the American market instead of the prices that were being depressed by chronic overproduction and unorganized marketing. It was accordingly agreed in November, 1940, that the estimated United States demand for coffee should be apportioned on a proportional quota basis among all the producing countries which still had access to this market in spite of the war. The quotas were worked out by mutual agreement between representatives of the producing countries. The United States, for its part, agreed to provide double assurance that the quotas would be respected by refusing to admit any coffee in excess of quota, and the Congress of the United States passed legislation giving its customs officials the necessary authority. Each producing nation then enacted local legislation to distribute the national quota among the individual producers, giving to each planter his proportional share.

(Continued on page 60)



Colonel Edwin L. Drake

Above: Drake Museum Near Titusville.

Paul H. Giddens Curator of Drake Museum.

DRAKE MEMORIAL, SHRINE OF THE OIL INDUSTRY

ON August 27, 1859, Colonel E. L. Drake completed the first well ever drilled for petroleum about two and one-half miles south of Titusville, Pennsylvania. This month the oil industry celebrates the 85th anniversary of this important event which marked its real beginning.

Since the pioneer well was completed various movements were started to memorialize this epoch-making event. In the main these movements took three directions. One proposed to erect a monument to Col. Drake; another proposed to preserve and mark the site of the Drake well; and the third contemplated the establishment of a museum and a library into which would be gathered mementos of the birth and early days of the oil industry, and to bring together as much of the early records and printed matter relating to oil history as could be found.

The first movement reached its objective with the erection of a monument to Drake in Woodlawn Cemetary, Titusville, where Drake is now buried. This monument consists of a huge granite boulder and was the gift of the late H. H. Rogers.

The movement for preserving and marking the site of the Drake well made slow progress for many years, but eventually, through the efforts of a large number of individuals and appropriations made by the Pennsylvania State Legislature, the Drake Memorial Park was acquired and now comprises slightly more than 200 acres. This tract, surrounding the site of the first oil well has been protected by a dike from the raging flood waters of Oil reek, drained, landscaped and provided with approaches, roadways and modern conveniences. The Park is now owned by the State and is under the supervision of the Pennsylvania Historical Commission. By State law the American Petroleum Institute is empowered to appoint an Advisory Board of seven members to make recommendations for the care, maintenance and enlargement of the property, and to accept gifts or endowments for the purpose. Paul H. Giddens, professor of History and Political Science, Allegheny College, is the Curator.

The movement to establish a museum and Library as a repository for early oil memoribilia was started by E. J. Bell, of Titusville, who came into the oil region from Maine almost a decade after the completion of the Drake Well at the age of twenty-three. For a few years he worked as a driller and pumper in the oil field, but this did not appeal to his literary, artistic, and historical taste. Bell, therefore, soon took up newspaper work and printing. At the same time, he became interested in collecting everything and anything pertaining to early petroleum history. During the course of fifty years Bell collected a mass of newspapers, oil maps, oil books, early oil leases, account books of oil companies, pamphlets, prospectuses, business directories of towns in the oil region, newspaper clippings, and all kinds of relics, a collection unequalled by any in the United States. This led to the concept of a museum as a memorial for Drake and the Drake Well. The idea was that it should become a national storehouse for all kinds of historical records and relics pertaining to the history of the petroleum industry. Bell's collection would form the nucleus and, from time to time, other things would be added. Ultimately, it would be the largest single repository for materials on the petroleum industry in this country, if not in the world. Supported by oilmen throughout the nation, this museum would become a living monument to Drake and his famous well, also become a national shrine. In July, 1911, Mr. Bell announced plans for the Drake Memorial Museum, and made a plea for financial support. Slowly the idea gained strength and money began coming in. Through Bell's leadership, some staunch friends organized the Drake Memorial Association. The purposes of the Association were: (1 to perpetuate and honor the name of Drake; (2) to make the day of Drake's discovery, August 27th, a national holiday among oilmen through the United States; and (3) to complete and perpetuate the Drake Memorial Museum. The first celebration of Drake Day was held at Titusville on August 27, 1914, when a formal constitution for the Association was adopted and Mr. Bell was formally made trustee for the Museum.

With limited funds and on ground generously donated by Mr. R D. Fletcher and Dr. George W. Barr, a small brick building was soon completed near the Bell home, just west of Titusville and on the bank of Oil Creek. At the age of more than sixty, Bell did much of the actual construction work himself; he plastered the interior, laid the floors, put in the partitions, and built the fireplace. When completed, he deposited his entire collection of historical records and relics in the Museum. His exhibits were so numerous that an adjoining farm house had to be used as an annex in which to store one-half of his things. The Museum was maintained at very little expense until Mr. Bell's death in 1923. A year or two before his death Mr. Bell, in order to insure its continuance, donated his entire collection to the City of Titusville and moved it to the basement of the Benson Memorial Library in Titusville. Here they remained until they were transferred to the new Museum building at the Park. The

Left: Rogers Memorial Monument to Drake. *Above: Drake Well Monument, Memorial Park.*

Museum is a small, one-story, colonial brick and stone structure about twenty by seventy-two feet in dimensions. It is located on the north side of an oval grass court facing south. The central room is about twenty by sixty feet and is used primarily as an exhibit room. Modern steel display cases not only provide facilities for exhibiting records and other items but provide facilities for storing documents. In the west end, there is a library room about twelve by twenty feet; this is provided with steel shelving for books and newspaper files. A large combination-lock safe serves as a depository for important manuscript collections.

This Museum and Library is a treasurehouse full of all sorts of historical records and relics pertaining to the early history of the petroleum industry. Mr. Edwin C. Bell's famous collection forms the nucleus to which a wide variety of materials have been added constantly since 1934. Most of the materials have recently been catalogued by the WPA and a card index is now maintained in the library. No printed descriptive bibliography is available; there should be one.

The largest and most important single collection of manuscripts is the Townsend Collection of papers, letters, and records relating to the organization of the Seneca Oil Company and the drilling of the Drake Well. The papers had been kept by James M. Townsend of New Haven, Conn., the leading spirit in the Seneca Oil Company, and were given to the Drake Museum in 1934 by his nephew, H. H. Townsend of New Haven. The minute Book of the Seneca Oil Company covering the period from March 19, 1858 to March 7, 1864, the Ledger, original leases and deeds, E. L. Drake's reports to the Company, letters of Drake, J. M. Townsend, William A. Ives, Asahel Pierpont, George H. Bissell, J. G. Eveleth, Anson Sheldon, and others, and various financial statements are among the more important papers in the collection.

Supplementing this material are some fifty letters belonging to Dr. Francis B. Brewer relating primarily to the organization of the Pennsylvania Rock Oil Company of New York, the first petroleum company organized in the world. They were given to the Drake Museum in 1941 by the late Mrs. F. B. Brewer of Westfield, N. Y., and her son, George E. Brewer of Erie, Penna. These letters cover the period from September, 1854 to December 12, 1855; they were written to Dr. Brewer by Albert Crosby, Eveleth, Bissell, Sheldon, Samuel Brackett, and many others. Most of the knowledge we possess about the organization of this first petroleum company comes from these letters.

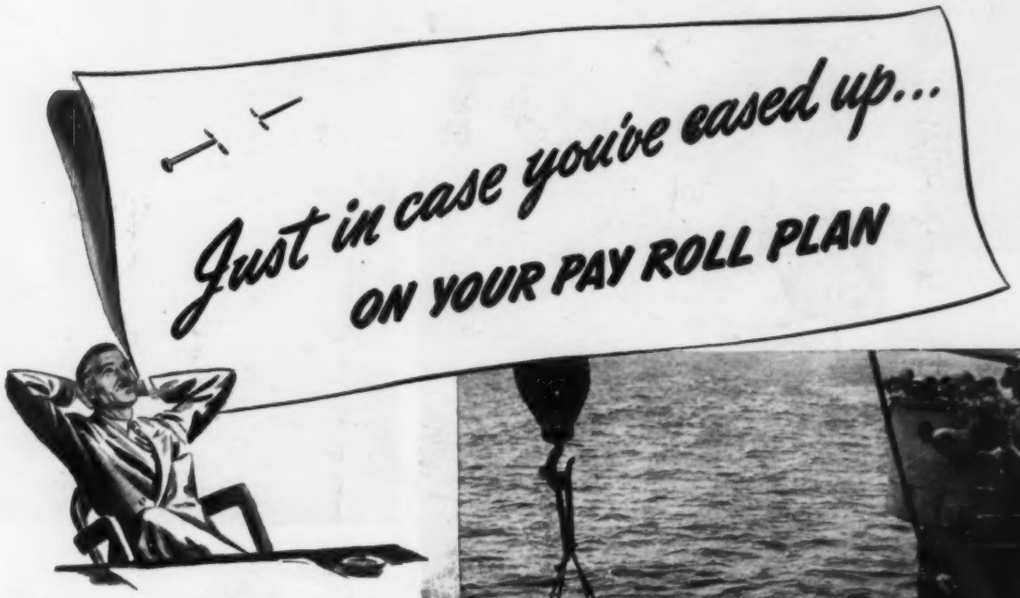
The third largest manuscript collection is made up of letters which belonged to George H. Bissell, one of the lawyers who organized the first petroleum company. There are eighteen of these written by Professor Benjamin Silliman, Jr., Anson Sheldon, George H. Bissell, A. Pierpont, E. L. Drake, and others. They admirably dovetail into the letters of the Brewer Collection and further illuminate our knowledge about the first petroleum companies. These letters were presented to the Museum in 1942 by Judge Pelham St. George Bissell of New York City, the grandson of George H. Bissell.

The latest manuscript addition is composed of eleven letters of E. L. Drake, written between February, 1864 and October, 1866. Theye were presented to the Museum by Mr. Homer Pastorius of Titusville during the summer of 1942. These letters relate primarily to the activities of Colonel Drake after he left Titusville.

There are many other manuscripts of a miscellaneous but important character: Colonel Drake's story of the Drake Well written about 1870, the early records of the oil exchanges in Oil City and Titusville, the contract between S. M. Kier of Pittsburgh and E. L. Drake dated November 14, 1859 for the sale of oil, the hotel registers of the old Moore House and American Hotel in Titusville and the Bonta House at Pithole. The Museum also has many stock ceritficates of early oil companies, oil company reports, early oil leases, oil well records, account books, and a large and valuable collection of maps showing the early presence of petroleum in the United States.

About 1860, when the excitement was running high over the Drake Well, John A. Mather established a picture gallery in Titusville and he became the pioneer photographer of the Pennsylvania oil region. Mather followed oil operators everywhere and wherever new strikes drew oilmen together he followed with his camera. Mather spared no labor in quest of scenes. His wagon in which he prepared his plates was a

(Continued on page 64)



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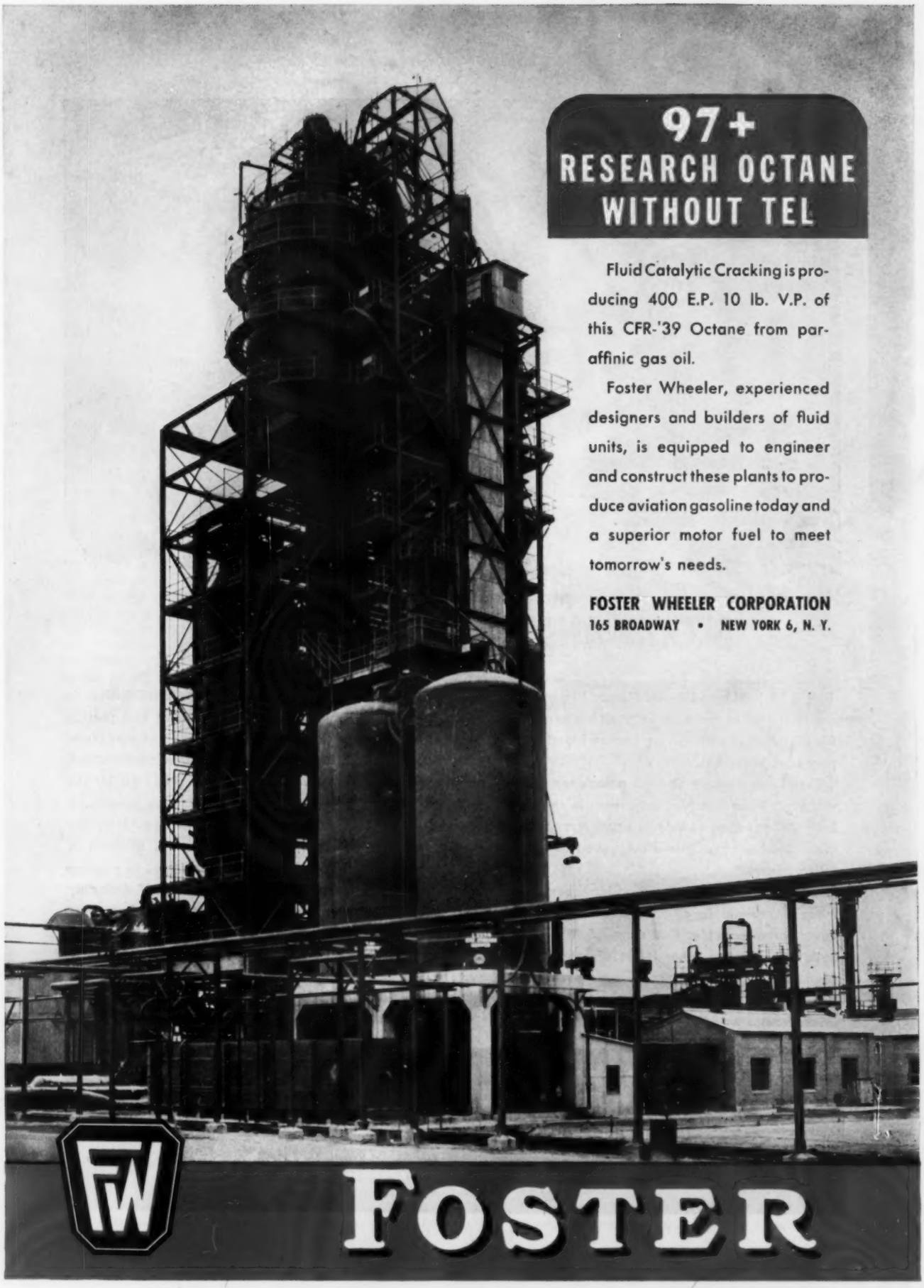
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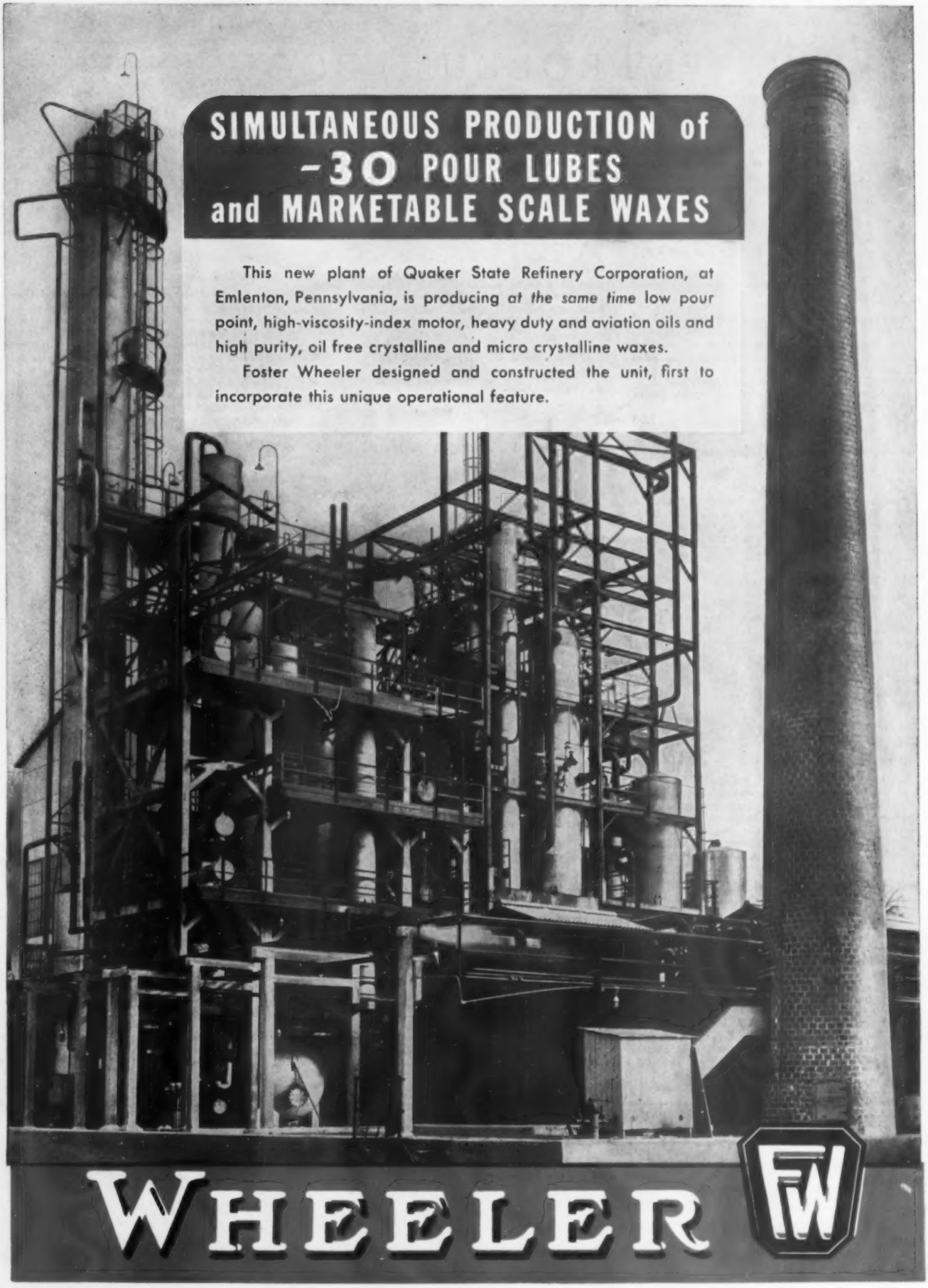
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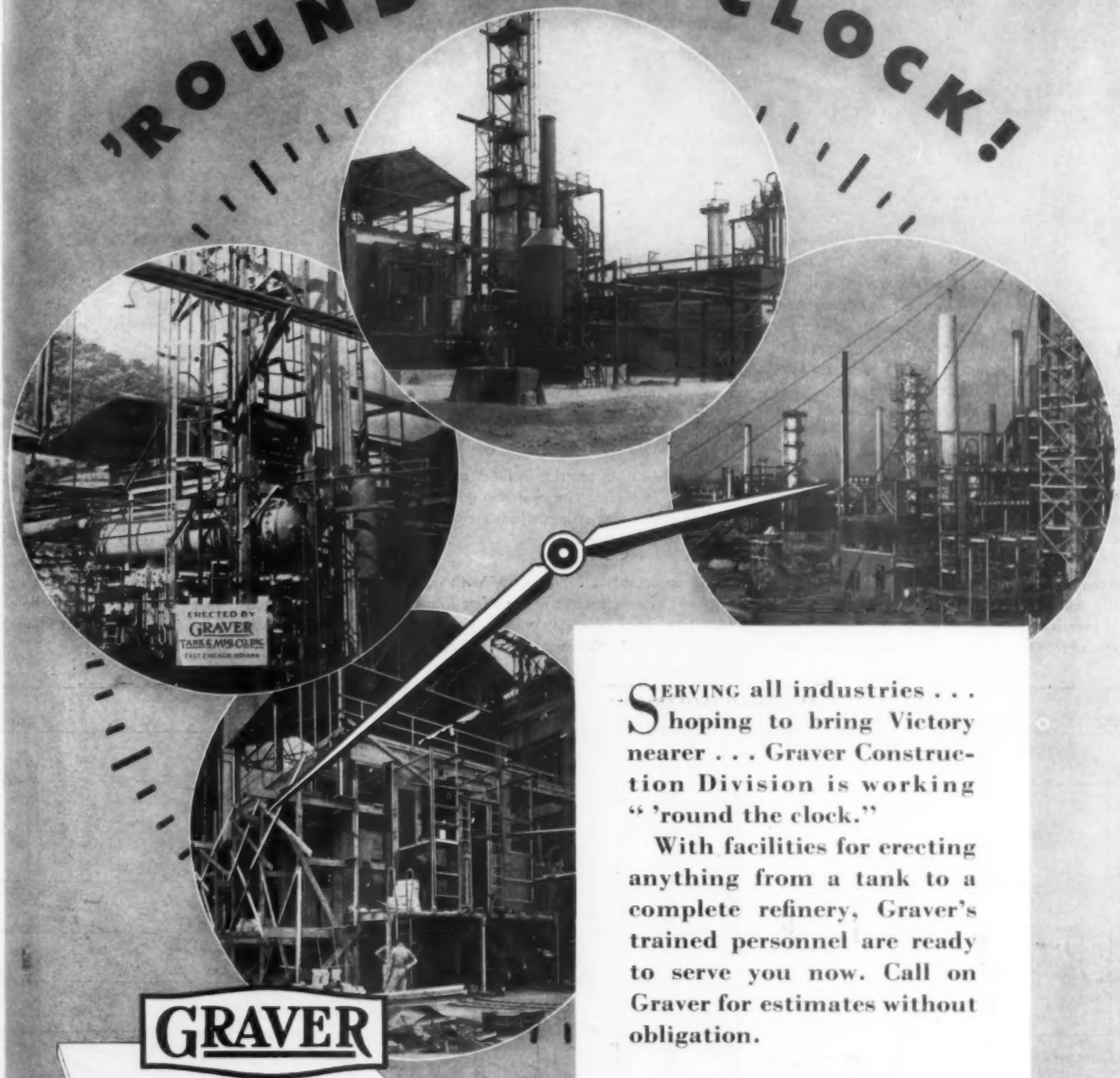

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SIGNIFICANT FEATURES OF WEST EDMOND FIELD

By E. G. Dahlgren

Long-neglected Area Produced Over Two Million Barrels in First Fourteen Months of Operation—Its Special Significance Lies in Recovery from Formations Not Previously Regarded Favorably.

HAILED as the biggest discovery in Oklahoma since the Oklahoma City field was discovered in 1928, the West Edmond field in northwestern Oklahoma County and northeastern Canadian County continues to spread out in a north and south direction. Defined on the east and west sides, prospects are that the field may be approximately twelve miles long. The southward extension of the field is threatening the abandonment of the proposed post-war Oklahoma City airport.

The field was discovered in April, 1943, when the Ace Gutowsky and D. D. Bourland et al No. 1 Wagner flowed up the derrick to surprise the Oklahoma oil fraternity.

Usually referred to as a "doodlebug" discovery, the structure is an old known "high" over which many geologists have tramped for years. Various individuals and companies have checked the area since 1926.

The area was in such low repute that Ace Gutowsky tried for nearly a year to sell leases to promote a well. The objective was the famed Wilcox sand production of Ordovician Age. The First Wilcox was found at 7508 feet, the Second Wilcox at 7640-90 total depth, and no oil. The well was plugged back to the Bois D'arc section of the Hunton Lime and completed for 365 barrels of oil in 12 hours, flowing by heads. The field now ranks as one of the best Hunton lime strikes the state has experienced, and is obtaining the world's deepest production from that horizon.

By the end of 1943 the field had 15 producing wells, which in eight months had produced 474,000 barrels of 41 gravity crude oil. On July 9 there were 81 completions in the Hunton and two completions in the Bartlesville. In Oklahoma county 115 operations were listed with 15 in Canadian county and three in Logan County. It is estimated that 175 locations will be required to fill in the open holes within the proved area at this time.

Approximately twenty contractors are operating about 55 drilling rigs in the field. At present, drilling contracts are on the basis of $6.50 to $7.50 per foot. The average drilling time is about 60 days. Power and steam rigs are used with derricks 122 feet high. Equipment is generally similar to that used in the Oklahoma City field. Natural gas is used for fuel as the gas is produced in the field.

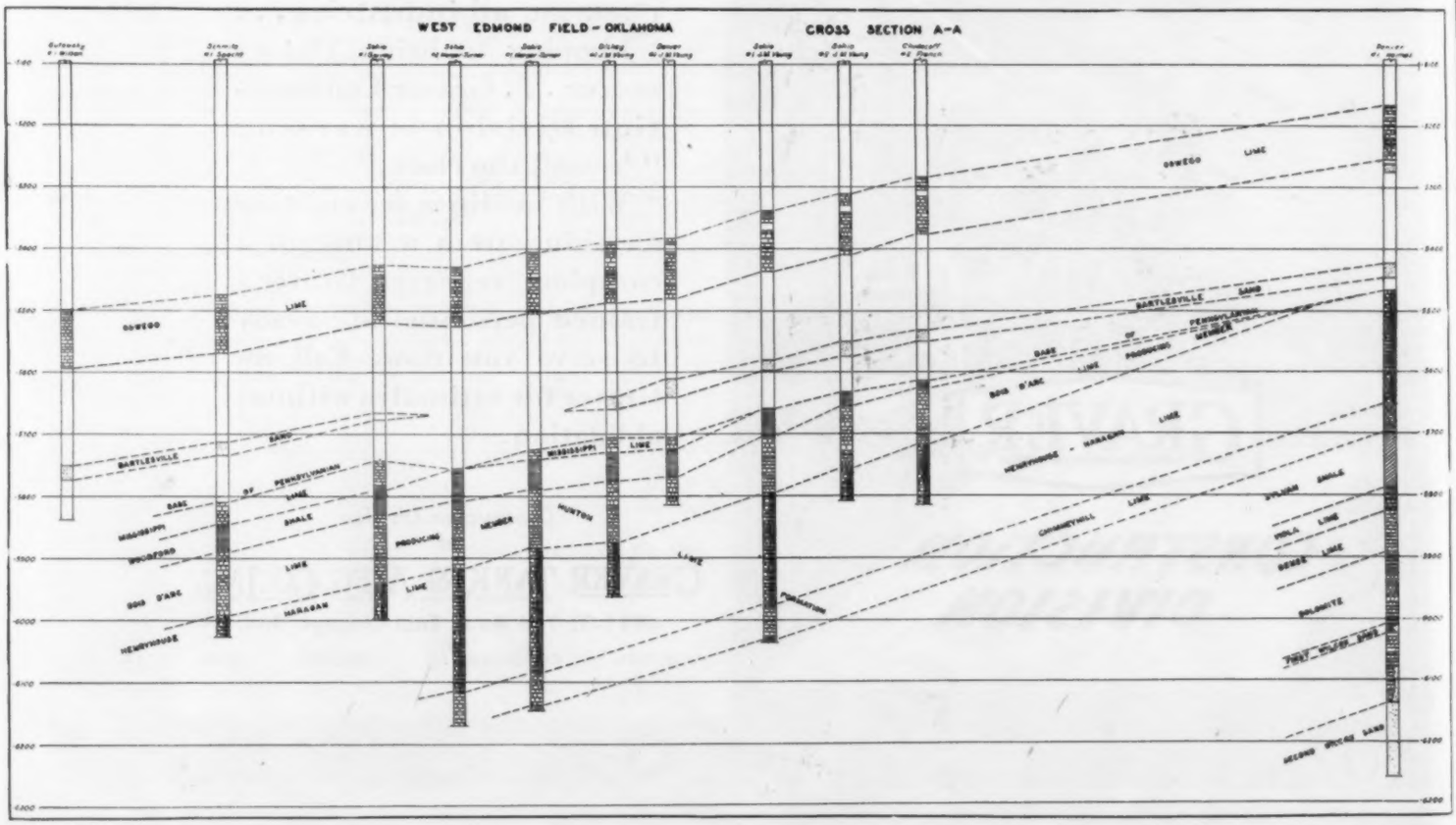
The accepted casing practice includes about 300 to 400 feet of surface pipe and about 7000 feet of 5½ to 7 inch flow strings which are cemented with 700 to 1500 sacks.

Drilling mud control is one of the most important phases of development in the West Edmond field. The usage of conditioning and treating practices has overcome various formational hazards. In the initial stages of the field the drilling water was obtained from a springfed creek which necessitated treatment to remove calcium and magnesium or counteract their contaminating effect. Some of the operators are obtaining better water through lines laid to the field.

The July allowable schedule of the Oil and Gas Conservation Department of the Oklahoma Corporation Commission lists 69 wells with the following operators: Amerada, Anderson-Prichard, Bourland, Chudacoff, Denver, Dickey, Fox & Fox, Fox & Schmitz, Magnolia, McMahon, Mid-Continent, Peppers, Sinclair Prairie, Skelly, Sohio and Wegener. The May pipe line runs from the field were 332,099 barrels with a total recovery to June 1 of 1,915,475 barrels.

Gas oil ratios average about 1,000 to 1,200 cubic feet per barrel with some wells with ratios considerably higher. All natural gas produced is utilized either in drilling gas lines or is sent to the Phillips Petroleum Company's natural gasoline plant located in the nearby Edmond field. The natural gas appears to be coming out of solution in the oil. Bottom hole samples have been taken in the field, but results are not obtainable at this writing. The natural gasoline content is ¾ gallon per 1,000 cubic feet.

Some salt water production along the west edge of the field indicates the possibility of a water drive. Operators are taking all precautions in not drilling too deep to encounter bottom hole water. The water line at present is about minus 5,900 feet.



Above: Checking Mud on a West Edmond Well.
Upper Right: Changing Pipe on a Drilling Well.

Recovery estimates have been scaled down to a range between 4,000 to 9,000 barrels per acre. Recoveries from the Bois D-Arc section in the Seminole area have been generally disappointing except for scattered locations.

In the initial stages of the field allowables were 400 barrels per day per well. Later they were reduced to 300 barrels per day. On May 1, 1944 the Corporation Commission reduced the allowable to 200 barrels per day. Bottom hole pressure readings indicated that the original bottom hole pressure had been reduced from 3,130 pounds to 2,920 pounds on April 27, 1944.

The Cimarron Valley Pipe Line Company has the only transportation system in the field. A gravity gathering system moves the oil to the main eight inch line just east of the field. The trunk line extends 90 miles northward to the Champlin Refining Company's high octane refinery at Enid, Oklahoma.

The crude oil is a typical Mid-Continent paraffin base oil. A crude oil analysis on the discovery well indicated a gravity of 42.1 degrees and a sulfur percentage of 0.10. The accompanying diagram shows an east-west cross section through the productive area.

Taking Bottom Hole Pressure With Corporation Commission's Equipment.

Discovery Well Log

Elevation (ft.)	1,083
	Sample Tops (ft.)
Pawhuska	3,327
Lower Pawhuska	3,634
Carmichael	4,435
Oread	4,750
Tonkawa	5,010
Lower Tonkawa	5,135
Avant	5,248
Checkerboard	5,860
First Oolitic	5,990
Oswego	6,490
Mississippi	6,814
Woodford	6,830
Hunton	6,890
Sylvan	7,225
Viola	7,325
Simpson (dense)	7,380
Second Wilcox	7,643
Total Depth	7,695
Plugged Back To	7,014

Crude-Oil Characteristics

Gravity	42.1°
Color	Brownish green
Sulfur, per cent	0.10
Viscosity at 100° F. (seconds)	39
Specific Gravity	0.815

Approximate Summary

	Per Cent
Light gasoline	10.2
Total gasoline and naphtha	31.9
Kerosene distillate	16.1
Gas oil	10.4
Nonviscous lubricating distillate	9.8
Medium lubricating distillate	6.8
Viscous lubricating distillate	0.7
Residuum	21.6
Distillation Loss	2.7
Carbon residue of crude	0.6

★ ★ ECHOES FROM THE WASHINGTON OIL FRONT ★ ★

By W. J. Maddox, Chief of World Petroleum's Washington Bureau

Anglo-American Talks

Lord Beaverbrook

RESUMPTION of Anglo - American oil discussions at this time crosses up predictions in some quarters that the touchy question of foreign oil would be postponed till domestic politics was out of the way. All parties concerned, it was reasoned, realized that the question was loaded with TNT politically. However, if the two governments wish to carry on their discussions with comparatively little publicity now may be a very suitable time.

Announcement of the personnel of the British delegation failed to revive the stir over foreign oil that attended the presence in Washington earlier this year of the so-called technical oil group. Every member of the delegation is a top-flight official. At the head is Lord Beaverbrook, who has held many cabinet posts and conducted many missions to this country. With him are Richard Law, minister of state; Geoffrey Lloyd, chairman of the Oil Control Board and Ralph Assheton, financial secretary of the treasury. Sir William Brown, who headed the British technical mission when it visited Washington to lay the groundwork for this "upper level" meeting, is chief technical advisor to the delegation.

The committee appointed by the President to conduct the conversations for the United States as announced weeks ago, is composed of Secretary Hull, chairman; Secretary Ickes, vice chairman; Secretary Forrestal; Under Secretary Patterson; Leo T. Crowley, Foreign Economics Administrator; Ralph K. Davies, Deputy Petroleum Administrator; Charles E. Wilson, Executive Vice Chairman of the War Production Board; and Charles Rayner, Petroleum Advisor of the State Department. Wilson's place at the conference table might indicate that the question of materials will play a part in the discussions and the agreements to be made between the two governments. The general assumption, however, has been that principles to govern British and American relations in matters relating to oil rather than specific activities would be the subject of the conference.

More War Materials Needed

MILITARY demands for petroleum products are now rising to unexpected heights and have led PAW to repeat with new emphasis the request which it issued to oil refiners two months ago to increase their output of specialized war products by all possible means. Special importance is assigned to such products as alkylate, hydrocodimer, codimer, isobutane, isopentone, toluene used by Army ordnance, butadiene, petroleum synthetics, base stock of 91 or better octane-number, and hydroformate and toluene used in aviation gasoline.

Rowan on War Council

A. H. Rowan

A. H. ROWAN, president of the Association of Oil Well Drilling Contractors Association, has been appointed a member of the Petroleum Industry War Council. This is a recognition not only of Mr. Rowan's broad knowledge of conditions affecting oil production but also of the important part played by drilling contractors in keeping oil output in pace with growing military demands. In his letter, advising Mr. Rowan of his appointment Deputy Petroleum Administrator Davies wrote: "Recognizing that your Association is widely representative of a group in the oil industry that has faced increasingly difficult problems as the war has progressed I am pleased to invite you, as the Association president, to become a member of the War Council. I am sure that as a member you will be able to make a useful contribution and I shall appreciate having your acceptance of the appointment."

Drilling at Elk Hills

ON July 15 Standard Oil Company of California brought in the first well drilled in Elk Hills under its new unit operating plan with Navy for developing the reserve and stepping up production from 15,000 to 65,000 barrels a day. Plans call for the drilling of 300 wells on the reserve. Two more wells are being drilled and preparations are making to start five others immediately. Standard is employing 12 drilling rigs and hopes to add three more before long. When the work gets into full swing, it is planned to step up drilling to average a new well every 24 hours.

The new well was completed 15 days after spudding it and is known as 43-34 S. It is 3037 feet deep. Speed-up in production on the reserve was requested by the Joint Chiefs of Staff who said more crude was needed to meet military requirements in the Pacific Theatre. Congress authorized the unit plan operation agreement between Navy and Standard after long delay caused by opposition to an earlier contract and in additional legislation approved an increase in production from the reserve.

DSC's Interest in Prices

JESSE JONES is watching for what may be the next logical step after PAW's cut-back in production of premium gasoline to conserve supplies of tetraethyl lead and the reduction of housebrand gasoline from 72 to 70 octane. This action by PAW may lead to a downward revision of the price structure, and the RFC Chairman certainly would not take this lying down. It will be recalled that part of the price increase originally allowed went into the pool to pay excess transportation costs to get oil to the East Coast when tankers were diverted from their normal routes. Any move to reduce prices now would be fought by Jones whose Defense Supplies Corporation pays out the transportation subsidy. Being a hard-handed banker, he naturally wants to see the subsidy pay its own way, as much as possible.

Foreign Division Changes

William C. Frysinger

DEPUTY Petroleum Administrator Ralph K. Davies has announced the appointment of William C. Frysinger and John D. Kurtz as assistant directors of the Foreign Supply and Distribution Division of the Petroleum Administration for War. Both were promoted to the new positions from within the PAW Foreign Supply and Distribution Division.

Mr. Frysinger's primary responsibilities will relate to short-term supply and transportation problems. The duties of Mr. Kurtz relate to long-term scheduling and planning and administration.

Commenting on the new appointments, Mr. Davies said: "Both Mr. Frysinger and Mr. Kurtz have done excellent work since they joined the PAW staff. Their efforts have added materially to the efficiency and smooth functioning of the Foreign Supply and Distribution Division."

Before his appointment to the PAW staff in

February 1943, Mr. Frysinger was with The Atlantic Refining Company, stationed in Philadelphia. He has had twenty-three years' experience in the foreign sales department of that company in this country and abroad. From December 1928 to November 1939 he was managing director of the company's branch in Hamburg, Germany. For a short time in 1942 he served in the Foreign Funds Control, Treasury Department.

Mr. Kurtz was appointed to the PAW staff in August 1941. He also was formerly with the foreign sales department of The Atlantic Refining Company, stationed in Philadelphia. He was associated with the company from 1928 until drafted by PAW.

From July 1932 to December 1937, he was assistant manager of The Atlantic Oil Storage Company, an Atlantic Refining Company subsidiary, in Antwerp, Belgium, and assistant manager of The Atlantic Refining Company of Germany in Hamburg. He returned to the U. S. in 1938 as an assistant on cargo purchases and sales.

John D. Kurtz

Heads Production Division

J. R. McWILLIAMS, of Billings, Mont., is the new director of the Production Division of the Petroleum Administration for War. He will fill the position made vacant in May when Donald R. Knowlton resigned as production director to return to the Phillips Petroleum Company, of Bartlesville, Okla.

Mr. McWilliams is taking leave of absence from his position as vice president and manager of the northwest division of the Carter Oil Company to join the PAW staff.

"At the present time crude oil must be produced in greater quantities than ever before in order to keep pace with record-breaking refining operations and unprecedented military demands," said Deputy Administrator Davies in making the announcement. "This appointment fills a critically important vacancy in our organization. I am greatly pleased that Mr. McWilliams has agreed to devote himself to the war service of the nation."

Born in Barton County, Mo., in December 1895, Mr. McWilliams received his elementary and high school training in the public schools of Iola, Kan. In 1919 he received a degree in civil engineering from the University of Michigan.

For six years following his graduation, Mr. McWilliams served in many engineering capacities in oil fields throughout the country. From 1925 to 1933 he was a production engineer in the mid-continent area for the Skelly Oil Company with headquarters in Tulsa, Okla.

For six months in 1933, Mr. McWilliams was assistant proration umpire for the Oklahoma Corporation Commission in Tulsa. In April 1934 he joined the Carter Oil Company as proration engineer. He was transferred to the Standard Oil Company of Louisiana as vice president in charge of production with headquarters in Shreveport in March 1936.

In May 1941 he was transferred back to the Carter Oil Company as manager of production with offices in Tulsa. He has been vice president and manager of the northwest division of the company stationed in Billings, Mont., since last April.

Naval Reserves Director

Captain Greenman

CAPTAIN WILLIAM G. GREENMAN, the new director of Naval Petroleum Reserves, comes to his present job with some three years' background as inspector of Navy's reserves in California, March 1936, to July 1939. He succeeds Rear Admiral Harry A. Stuart, who has served as director for ten years now goes on the inactive retired list.

Since leaving his California assignment in 1939, Captain Greenman has seen plenty of sea duty. Twice he was commander of destroyer squadrons, and from 1940 to 1942 was aide and chief of staff to the commander of destroyers, Atlantic Fleet. In May 1942 he became commanding officer of the cruiser Astoria and was in charge of her when she was sunk in the first battle of Savo Island, August of that year. For wounds received in that action he was awarded the Purple Heart.

Following his recovery, Captain Greenman was occupied with various duties in the Pacific until April of this year when he was transferred to duty at Washington. He is a native of Utica, N. Y., 54 years old, and a graduate of Annapolis, class of 1912.

Pike Is Optimistic

WITH the war on the European front approaching a climax that some people are predicting will be resolved before many months, the question is being asked: What will be the position of the domestic oil industry if Germany suddenly collapses? With crude production stepped up to its highest point, what's going to be the effect of a sudden slackening of military demands in Europe? Will we have over-production? And what will a flood of oil do to prices?

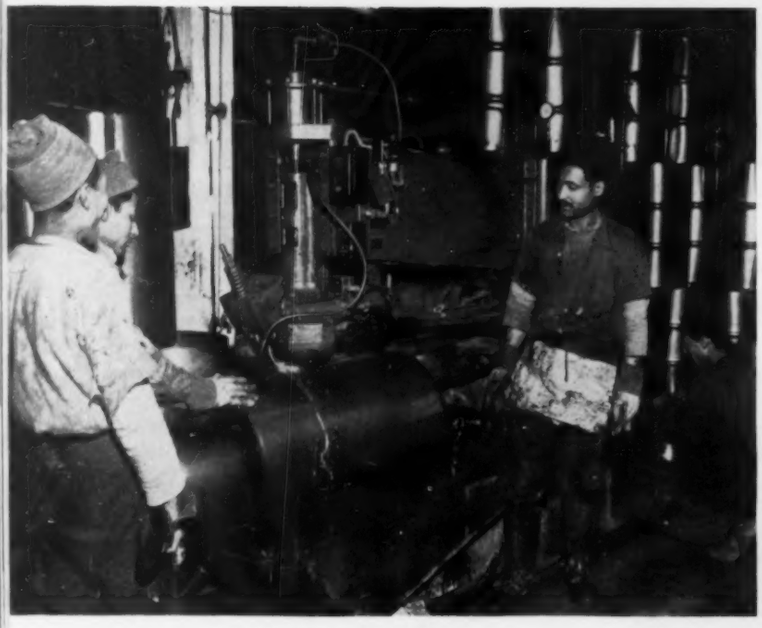
WORLD PETROLEUM took these questions to Sumner Pike, Securities Exchange Commissioner, who continues to divide his time with OPA as its oil price chief. Here's a brief of his ideas on the matter: There will be no abrupt drop in the demand for petroleum with the sudden ending of hostilities in Europe. The increasing tempo of the Pacific war will take up a great deal of whatever slack may come in European demands.

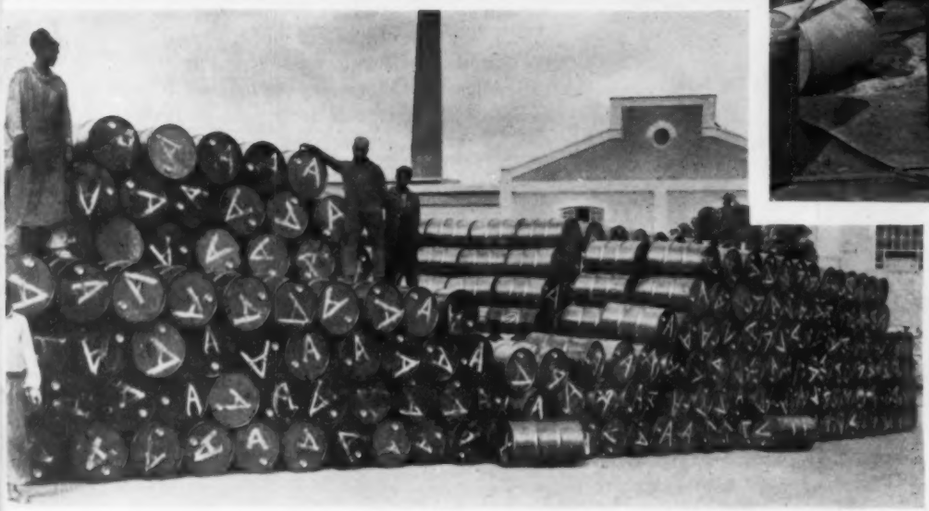
Then, too, civilians in this country will dispose of a large amount of products when rationing regulations are lifted or become more liberal. There is a lot of "backed up" traveling that the American public is waiting an opportunity to indulge in. Moreover, the industry is well aware of the fact that some fields have been and are being over-produced to meet military demands. Operators will be glad to cut back production in these areas and put production again on a sounder economic basis. On the whole, the oil business probably has less to fear from the throes of readjustment than many other lines of industry. And there is nothing to indicate that the industry is not alive to the problem and prepared to take proper steps. If the industry handles the problem with reasonable care, there seems to be little cause for worry over the post-war position of domestic supplies.

Speed Leaves PAW

Carleton Speed, Jr.

AMONG the latest departures of oil men from PAW is Carleton Speed, Jr., of Houston, Texas, who for nearly two years has headed up the exploration section of the Production Division. A petroleum technologist, Speed was president and general manager of his own company, the Speed Oil Company, from 1936 to August, 1942 when he entered a government service. For five years before that he engaged in geological and geophysical work, as well as drilling, with various oil companies in Texas. He received his B.S. at Texas A. and M. Speed's plans for the immediate future include a long vacation in Maine, and after that, as he puts it, "catching up on some of the traveling" he has wanted to do for years. When war conditions permit, he hopes to visit some of the foreign oil fields.



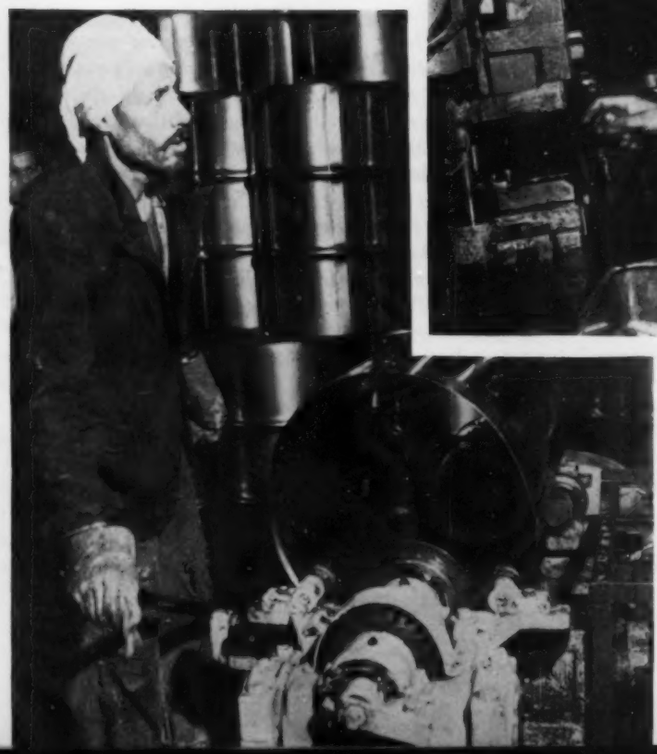


ARMY'S CAN-MAKING PLANTS

MOST of the petroleum products now going overseas for military use are shipped in bulk instead of in drums or other containers as was the case in the early stages of the war. The change obviously makes for greater speed and economy. It has been made possible through the action of the Army Quartermaster Corps in setting up a number of plants for making 5-gallon "blitz" cans and 55-gallon drums in and near various theatres of operation. Five of these can-making factories are distributed through the Middle East and the Army is also cooperating with the British in the use of six can and drum plants in India. To save cargo space the steel used is shipped from this country flat.

The five Middle-East plants were built in this country and shipped to the Levant knocked-down, then reassembled and put into operation. The six plants in India are owned by the oil companies in that country, and in some instances are still being operated by them under an agreement with the Army, which is their sole customer.

(Continued on page 62)



Upper Left: Welding Drums for Field Use.

Upper Right: Egyptian Workers Operate Painting Machine.

Lower Left: Drums Outside Army Container Plant.

Above: Stamping Jerrican Lids at Choubra.

Left: Shaping Drum Blanks at Alexandria Plant.

(Photos Courtesy Signal Corp. U. S. Army)

Quality up, cost down

Doctor sweetening was used in a western refinery to remove mercaptan odor from gasoline It did that, but it also caused considerable loss of gasoline, degraded the octane rating and reduced lead susceptibility so low that Ethyl grade gasoline could not be made

Universal's suggested remedy was adopted — the Unisol treating process — which removes the mercaptans instead of merely changing their form

A Unisol treating plant, costing $20,000, proved a mighty good investment

Gasoline treating loss has been cut almost to zero Unleaded octane rating, instead of being degraded, has been raised half a point Lead susceptibility has been so improved that 3 cc of tetraethyl lead now produces gasoline of 80 plus octane rating

Cost of treating chemicals, less than half a cent a barrel

Savings during 18 months of operation, $30,000

What are your treating problems?

CATALYTIC CRACKING	HYDROFORMING
REFORMING	DEHYDROGENATION
HYDROGENATION	POLYMERIZATION
ALKYLATION	UNISOL TREATING
ISOMERIZATION	RETREATING
THERMAL CRACKING	POLYTREATING
U. O. P. CATALYSTS	U. O. P. INHIBITORS

GASOLINE POWERS THE ATTACK — DON'T WASTE A DROP

Universal Oil Products Co.
Chicago 4, Ill., U. S. A.

UOP

Petroleum Process Pioneers
For All Refiners

The Refiners Institute of Petroleum Technology

Oil Company Staff Changes

B. Th. Van Hasselt

B. TH. VAN HASSELT who has been in charge of Royal Dutch Shell interests in Venezuela for the past several years has transferred his headquarters to London following his appointment as a Managing Director of the Royal Dutch Shell group.

Mr. Van Hasselt's experience covers a broad field of international oil operations. Born in Netherlands India 47 years ago he was educated in Holland and studied law there. He entered the employ of the Royal Dutch Company at the age of 22 and his first service was in the legal department with subsequent appointment as assistant general manager at Caracas, Venezuela. In 1932 he was transferred to London and filled various positions in the main offices there and at The Hague until his assignment as chief administrator at Batavia, N.E.I. in the following year. From Java Mr. Van Hasselt moved to Mexico where he was general manager and director of El Aguilla, Mexican subsidiary of Royal Dutch Shell in 1937 and 1938. Following the expropriation of the company's properties he left Mexico in 1939 to take up the position of general manager of Shell interests in Venezuela. He remained in Caracas until his recent selection as a member of the small group of top officials who direct the world wide activities of Royal Dutch Shell, a position for which his ability and long experience amply fit him.

ROBERT J. HULL has been named manager of the New York Division of Cities Service Oil Company (Pa.) according to an announcement by J. S. Cordell, vice president and general manager of the company. In his new capacity, Mr. Hull will have charge of the marketing operations of the Company in eleven Central Atlantic States.

Mr. Hull joined the Cities Service organization in 1923 after graduating from the Massachusetts Institute of Technology. He is well known in oil circles through the various posts he has held with Cities Service and the Petroleum Administration for War.

A. L. NICKERSON of Boston, New England division manager of Socony-Vacuum Oil Co., Inc., has been appointed assistant general manager of eastern marketing with headquarters New York, Mr. Nickerson is 33 years old and has been with the company since 1933. L. A. Myers, New England division manager of industrial lubricating sales, has been named to suceed Mr. Nickerson.

ANNOUNCEMENT of the election of F. E. Rehm as a vice president of Shell Oil Company, Inc., is made by S. Belither, chairman of the board. Mr. Rehm joined the Shell organization in 1916 in Ventura, California. He has served in the production department, becoming production manager in 1935. He was named head of the oil company's industrial relations department, San Francisco, in 1938.

Since July, 1942, Mr. Rehm has been Manager of the industrial relations and personnel department. He will continue in charge of that department, in addition to his duties as an officer of the corporation.

HERBERT P. SCHOECK, assistant treasurer of the Standard Oil Company (New Jersey), has been elected treasurer of that company's operating subsidiary, the Standard Oil Company of New Jersey. He succeeds Jay E. Crane, recently elected a director of the parent company. Edward McNeil, head of the foreign exchange division of Standard of New Jersey, succeeds Mr. Schoeck as assistant treasurer of the parent organization.

Mr. Schoeck has had twenty-seven years' experience in financial operations of the company. After working in the various divisions of the department he was placed in charge of the division handling payroll, statistical and social security matters. In 1940 he was made assistant treasurer.

Mr. McNeil has had twenty-seven years' experience with the company, chiefly in the field of foreign exchange. He was first employed in 1917 as a clerk at the Bayway refinery, serving in various capacities until his appointment in 1927 as assistant division head of the foreign exchange division. During 1936 Mr. McNeil visited eleven European countries to study the financial activities of associated companies and, more recently, completed a similar trip to all countries in South America.

ROY WM. CARVER, well known California oil executive, for the last fifteen years associated with the Rio Grande and Richfield Companies, and since the organization of the new Richfield Corporation in 1937, Manager of that company's Land and Lease Department, has announced his resignation effective July 1, to enter private business.

Carver is one of the best known land and lease men in the California industry. Following his graduation from Stanford University and return from European service in World War No. 1, he was associated with the land departments of the Superior and Getty organizations before joining Rio Grande in 1929. As a result of these associations he has been closely indentified with the discovery of a number of important oil fields and with the growth of some of our most important producing companies, his experience having extended into the several western states, including Montana, and Texas.

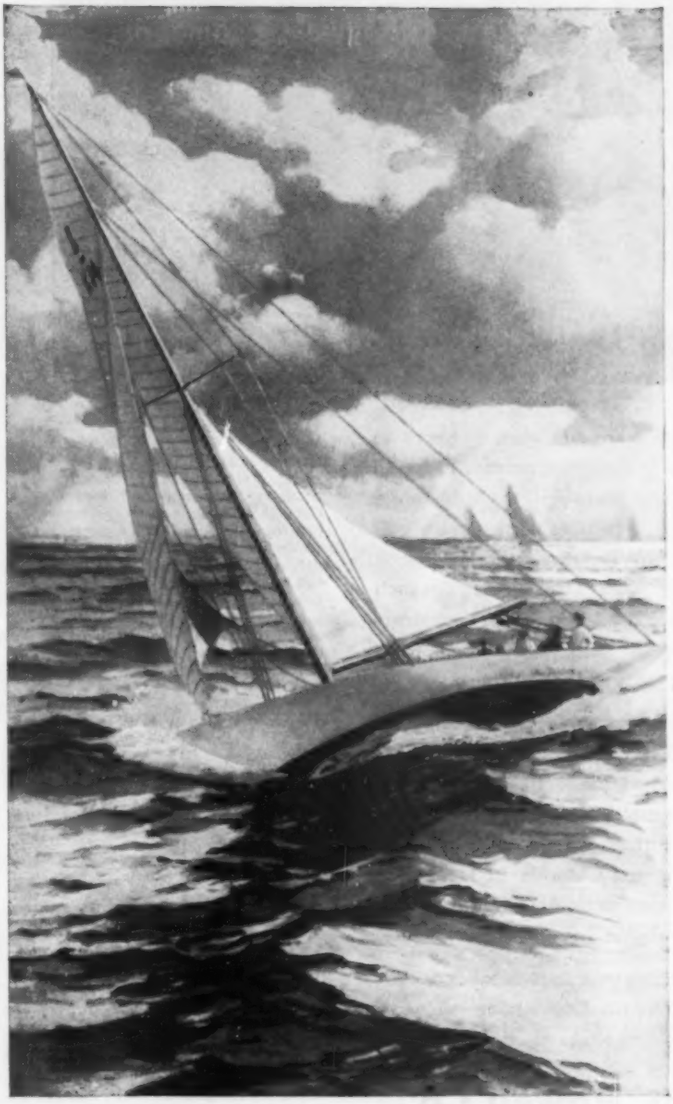
(Continued on page 75)

Robert J. Hull

F. E. Rehm

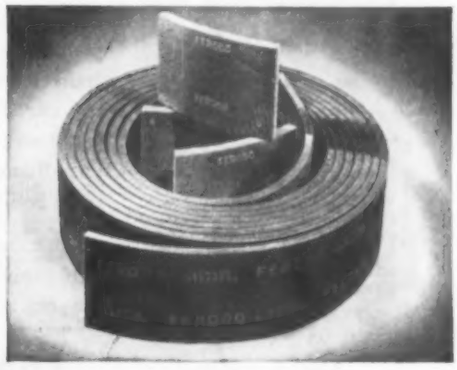
Roy Wm. Carver

Smooth Efficient Action!



FERODO FRICTION MATERIALS ARE SMOOTH IN ACTION — AND HOW THEY GRIP!

Smooth action coupled with great holding power are prerequisites of friction materials employed in the petroleum field. These essential qualities are most pronounced in Ferodo woven Friction Linings. They retard firmly and smoothly under the most arduous conditions. Tough and long-lasting, Ferodo Friction Linings withstand the exceptionally heavy duty imposed on drawworks brakes in drilling operations. Their durability thus cuts maintenance costs—for renewal is required only after long periods of wear. Supplied in rolls or formed to drum diameter these quality-built friction materials merit your investigation where the question of lower operating costs is being considered. Our dealers below will give you fuller particulars.



F E R O D O

FRICTION LININGS

Agents—**ARGENTINE, URUGUAY and PARAGUAY** : Anderson Levanti and Co., S.R.Ltda., Alsina 471/485, Buenos Aires. **CANADA** : J. C. McLaren Belting Co., 620, Beaumont Street, Montreal. **PERU** : Milne and Co., S.A.Lima. **U.S.A.** : Ferodo and Asbestos Incorporated. New Brunswick, New Jersey. **INDIA** : Asbestos Cement, Ltd., Mulund, Bombay. **TRINIDAD** : F. J. Miller and Co., 30, Richmond Street, Port of Spain. *FACTORY REPRESENTATIVE* in Chile, Peru, Bolivia, Equador and Columbia : A. Dodson, Casilla 2130, Santiago, Chile.

INSIST ON FERODO LININGS FOR BRAKE EFFICIENCY

REGD. TRADE MARK FERODO

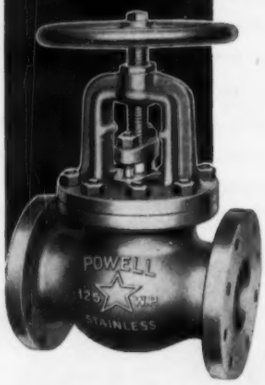


Fig. 2457—Large size Stainless Steel Globe Valve for 125 pounds W. P. Has flanged ends, outside screw rising stem threaded through bronze yoke bushing, full round bolted flanged yoke bonnet, and plug type disc. Sizes, 4" to 12", inclusive.

Guessing and gazing are out when it comes to buying your flow control equipment. Because, for even the simplest operation, the valve must be of correct design to obtain maximum efficiency. This not only includes basic type, such as Globe, Angle, Gate, "Y", Check, etc., but such factors as suitable stem action, bonnet construction, working pressure and especially the materials used in the body and mountings.

The valves shown here are a few of the complete line designed by POWELL Engineering for refinery services. When made from the proper pure metals or special alloys, as recommended by our Engineers, they are especially adapted for handling Hydrogen Chloride in Isomerization Plants and Hydrofluoric Acid, Sulfuric Acid, and Sodium Hydroxide in Alkylation Plants.

And, to help you solve your individual flow control problems, POWELL Engineering is always at your service for consultation.

The Wm. Powell Co.

Dependable Valves Since 1846

Cincinnati 22, Ohio

Fig. 1944—Stainless Steel "Y" Valve for 125 pounds W. P. Has flanged ends, with outside screw rising stem threaded through bronze yoke bushing and bolted flanged yoke bonnet. Body can be provided with cleanout pockets on special order. This type of valves provides the straightway full flow area of the Gate valve plus the throttling feature and easy regrinding and renewability of disc of the Globe valve, thereby effecting considerable savings in maintenance.

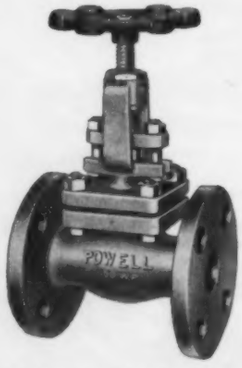


Fig. 1979—Stainless Steel Globe Valve for 150 pounds W. P. Has flanged ends, outside screw rising stem threaded through bronze yoke bushing, bolted flanged yoke bonnet, and plug type disc. Sizes, ¼" to 3", inclusive.

POWELL VALVES

THERE'S A NEW KIND OF GAS SHORTAGE NOW!...

Even though America's oil industry is producing more gasoline than all other countries put together—a critical situation now faces every American who drives a car...

There is a very real gas shortage that had to come when the mighty machine of war you have built went on the attack.

JUST TO GIVE YOU AN IDEA!...

It takes 3 tons of gas to "deliver" a 1-ton bomb!

Over half the total of all supplies shipped to the front is petroleum in one form or another!

Oil for one fueling of a battleship would heat an average house 350 years!

The oil industry has expanded swiftly and well. But—oil has many jobs to do. Oil makes synthetic rubber. From oil comes a basic ingredient for 4/5ths of all the TNT for bombs and shells. Oil makes a thousand things—including 100-octane aviation superfuel... And airpower eats up petroleum on a scale never before known. For example...

AVIATION GAS FACTS...

It takes about twice as much petroleum to make a gallon of 100-octane as to make automobile gas.

From 1942 to 1944, output of 100-octane aviation gas stepped up 8 times!

Training one pilot uses more gas than the average car uses in 18 years.

What it all adds up to is this... because *military* need for gas has stepped UP almost 4 times since 1942... less than 3/4 as much gas can be spared for the home front as in 1942!

This ration must cover essential needs first ... farms, trucks, buses, industry, your doctor's car... and these are up 20% over what they were in 1942!

The shortage is real. Your help is vital.

YOUR PART IS THIS...

1. **Don't apply for more gas than you really need.**
2. **Get into a ride-sharing club and stick to it.**
3. **Endorse all your gas coupons now.**
4. **Don't take extra gas or coupons from anyone.**

YOU CAN HELP KILL THE BLACK MARKET!

The black market does not MAKE gasoline. It STEALS gas—currently some 2,500,000 gallons a day—from the essential home front supply left after military needs. It works chiefly with counterfeit coupons, peddled by the same gangs who deal in prostitution, bootleg liquor, dope, and other rackets. Many have been caught. More will be. But without customers, the black gas racket would die overnight, making more gas available for regular rationing. *Don't take extra gas or coupons from anyone!*

GASOLINE POWERS THE ATTACK—DON'T WASTE A DROP!

NOTE: *This is the* third *in a series of advertisements sponsored by the petroleum industry in District No. 1 (Atlantic Coast), appearing in Sunday newspapers and signed by oil companies which supply virtually all of the gasoline sold in District No. 1. Oil companies in the other districts are planning to run similar advertising.*

10 SINCLAIR REFINERIES are now geared to war. Sinclair's war production includes 100-octane aviation gasoline, toluene for T.N.T., butylene for synthetic rubber, aviation lubricants and many other essential war products.

FREE BOOKLET — "Sinclair In War and In Peace." This 40-page booklet pictures and describes Sinclair's facilities in the fields of production, refining, transportation and distribution. It tells about new equipment built for the refining of 100-octane gasoline and synthetic rubber components. If you would like a free copy, write to Sinclair Oil Corporation, Dept. D, 630 Fifth Avenue, New York 20, N. Y.

SINCLAIR

TRADITIONAL RELIABILITY

B
T-H

TURBO-ALTERNATORS
TURBO-GENERATORS
(up to the largest sizes)

TURBINE OR MOTOR-DRIVEN
COMPRESSORS AND BLOWERS

WATER-POWER OR ENGINE-DRIVEN
ALTERNATORS AND GENERATORS

CONVERTING MACHINERY
SWITCHGEAR, TRANSFORMERS, RECTIFIERS,
AUTOMATIC SUBSTATIONS

POWER FACTOR IMPROVEMENT PLANT

ELECTRIC WINDERS, ROLLING MILLS,
AND
ALL KINDS OF HEAVY ELECTRIC PLANT

MOTORS AND CONTROL GEAR
FOR ANY INDUSTRIAL APPLICATION
(large or small)

REGENERATIVE DYNAMOMETER EQUIPMENTS
FOR ENGINE TESTING

ELECTRIC SHIP PROPULSION

ELECTRIC TRACTION
(Road or Rail)

INDUSTRIAL HEATING EQUIPMENT

CINEMA PROJECTOR EQUIPMENT

ELECTRONIC VALVES
OF EVERY DESCRIPTION

• • •

SPECIFY BTH
ELECTRICAL EQUIPMENT

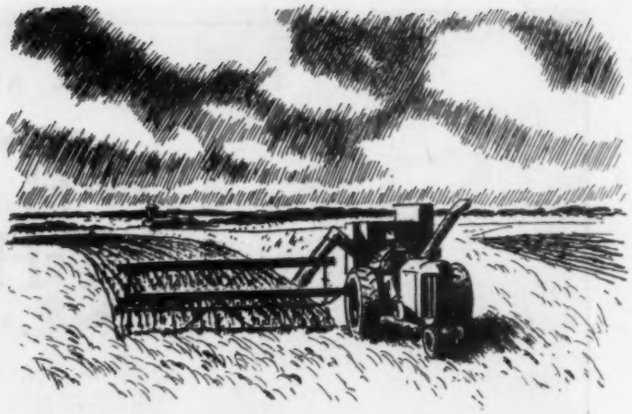
BTH

THE BRITISH THOMSON-HOUSTON CO., LTD.
CROWN HOUSE, ALDWYCH, LONDON, W.C.2

A3447N

AEI

800,000 acres... saved for food production



Industrial alcohol is one of the most important raw materials of modern, scientific war. From it are made explosives, synthetic rubber, plastics, solvents... literally hundreds of vitally necessary chemical products.

To find new ways of making alcohol, scientists in our laboratories years ago perfected a method of turning oil into alcohol. In 1920, they made possible the first commercial manufacture of isopropyl and secondary butyl alcohols from petroleum. In 1935, the first pilot plant for production of ethyl alcohol from refinery ethylene began operation.

Today, enough alcohol to release 800,000 acres of grainland for wheat-growing has been produced in our refineries.

Petroleum research is continuing in our laboratories, where 1500 people are digging for new oil facts day after day. In their hands, oil will be turned to more and more uses, to make more and more of the things America needs to win Victory and keep the peace.

STANDARD OIL COMPANY (NEW JERSEY)

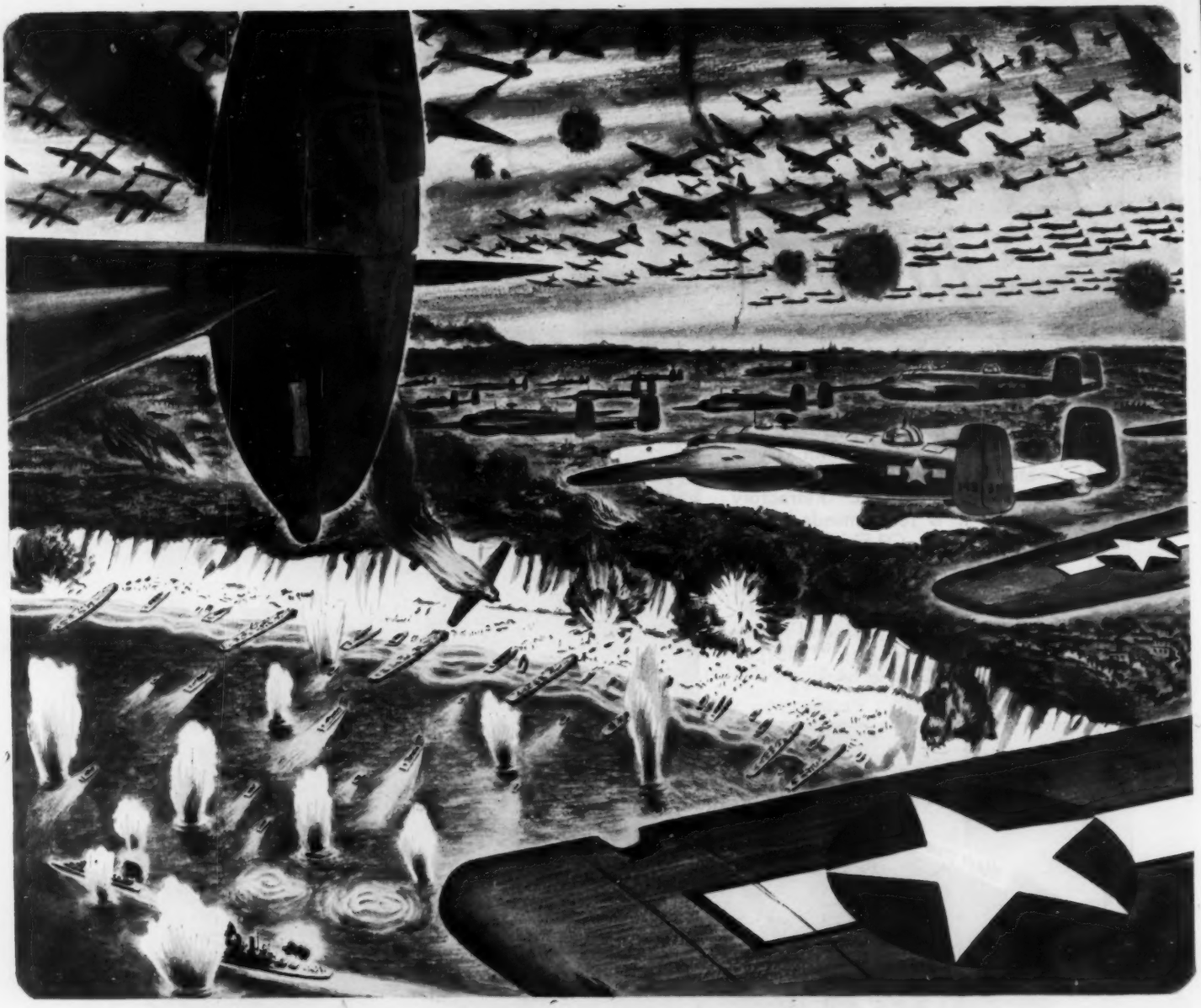
AND AFFILIATED COMPANIES

For Oil-Fired Furnaces

NETTLE (42/44% Al_2O_3) Firebrick is Highly Refractory (Seger Cone 34/35) and combines Resistance to Spalling and Corrosion with volume —Stability and Accuracy of Shape. Jointed with "NETTLE" Refractory Cement, it is recommended with confidence for Oil-Fired Furnace Linings. In cases where exceptionally high temperatures are experienced, we recommend "STEIN SILLIMANITE" (62/63% Al_2O_3) and where conditions are easier, "THISTLE" (35/37% Al_2O_3) Firebrick.

STEIN *Refractories*

JOHN G. STEIN & CO. LTD. BONNYBRIDGE, SCOTLAND



It takes a lot of gasoline

TO MAKE AN UMBRELLA FOR G. I. JOE

WHEN YOU know that just one single-seater fighter carries about 500 gallons of gasoline on take-off, you can well imagine what any large-scale operation requires. The figures run into millions—and every gallon must be top quality. Fighting gasoline is the "cream" of U.S. production, practically all of which contains Ethyl fluid.

When peace is won, most of this high-octane gasoline will be able to stay home . . . and ultimately post-war automobile, truck, bus and tractor engines will be designed to get more power from high quality gasoline.

We of Ethyl look forward to working with the engineers of the automotive, petroleum and aviation industry in the development of post-war engines and fuels. Many of our research workers in Detroit and San Bernardino are now engrossed in necessary war work. When the fighting is over they will once more be ready to serve industry in the improvement of peacetime transportation.

\+ + +

ETHYL CORPORATION

Manufacturer of Ethyl fluid, used by oil companies to improve the antiknock quality of aviation and motor gasoline.

ETHYL — BRAND OF ANTIKNOCK COMPOUND — ETHYL CORPORATION

GASOLINE POWERS THE ATTACK—DON'T WASTE A DROP!

"Newall Hi-tem" BOLTS & STUDS

Metallurgists have always been important to engineers but now they are essential.

One of the major developments in engineering is the use of high pressure steam with its accompanying high temperatures.

Normal steel is not suitable for operating at the extreme heat necessary, so the metallurgist has come to the aid of the engineer and has introduced a new type of steel with non-creep properties.

With this at our disposal we have been able to develop Newall Hi-tem bolts and studs.

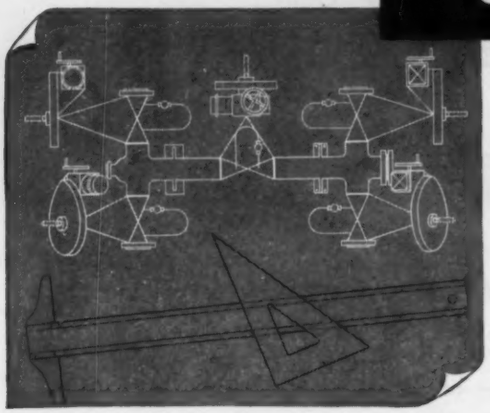
In addition to their non-creep qualities, Newall Hi-tem bolts and studs have elastic properties of great importance for high pressure work.

They have threads which are not only extremely accurate but have other characteristics necessary for such conditions.

A.P. NEWALL
AND COMPANY LTD.
POSSILPARK, GLASGOW. N.

Shop-Fabricated Assemblies . . A Complete Service from CRANE

1. ON THE DRAWING BOARD — *No matter how complex your piping assembly design may be, all parts—valves, fittings, and pipe—are supplied by Crane. One source of supply—one order covers everything.*



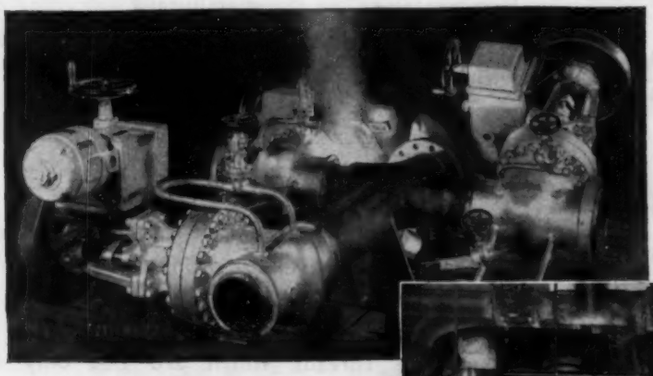
SHOP-FABRICATION typifies Crane complete service in the highest degree. Your blueprint in Crane Pipe Shops means delivery to your installation of a unit meeting every intent of design. For at Crane, no job is too small—none too large or complex—and absolute adherence to specifications is a matter of pride.

As the world's leading supplier of valves, fittings, and fabricated piping, Crane Co. produces all types of header assemblies of valves and fittings. Completely shop-welded, stress-relieved and tested, and conforming fully to code requirements, such Crane-built units—whether for power or processing systems, high or low pressure—stand out as the finest combinations of materials and workmanship.

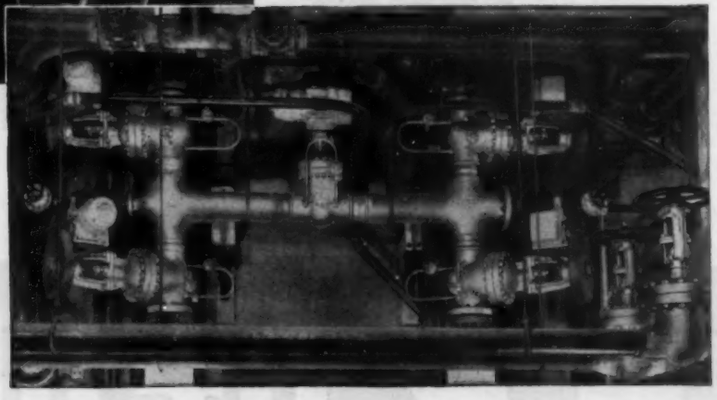
The same rigid control applied in making Crane valves and fittings marks every pipe shop operation. From raw materials to finished assemblies, one high standard of quality is maintained by the most elaborate facilities in the industry. Your complete satisfaction with every job is assured by Crane Co.'s 89-year leadership in the piping equipment field.

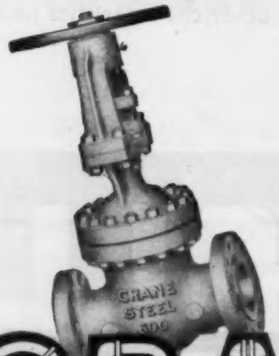
Crane Co., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. *Branches and Wholesalers Serving All Industrial Areas.*

2. IN THE FABRICATING SHOP — *All designs are completely fabricated by Crane. Proper selection of all parts is assured by the complete Crane line. One responsibility covers all materials and workmanship.*



3. ON THE JOB—*With Crane materials and Crane craftsmanship in every part, one standard of quality guards the entire assembly. Shown is the completed 12 x 8 x 4 in. header assembly of 600-pound cast steel motor-operated gate valves and fittings, installed in a central station.*

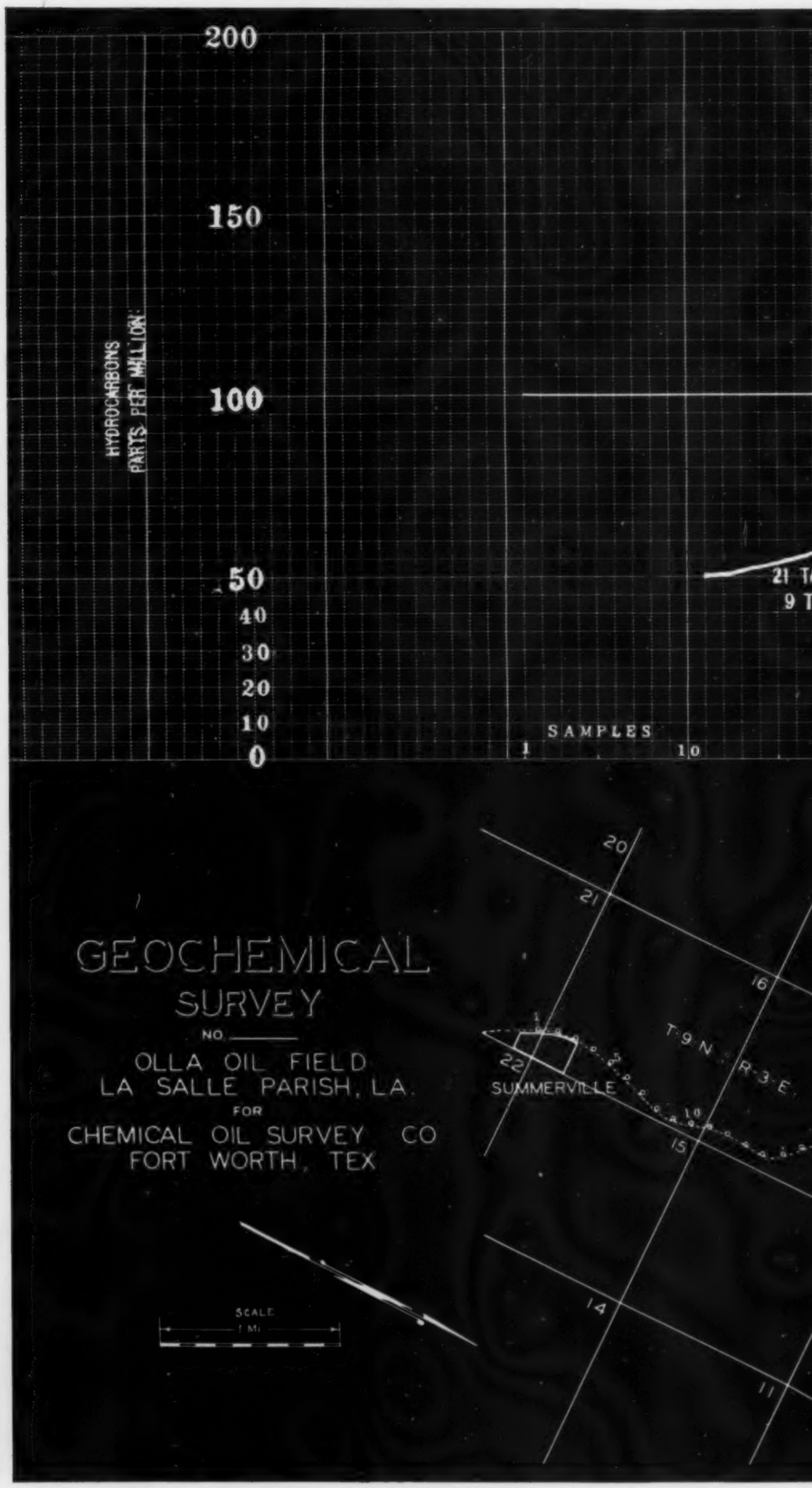




CRANE

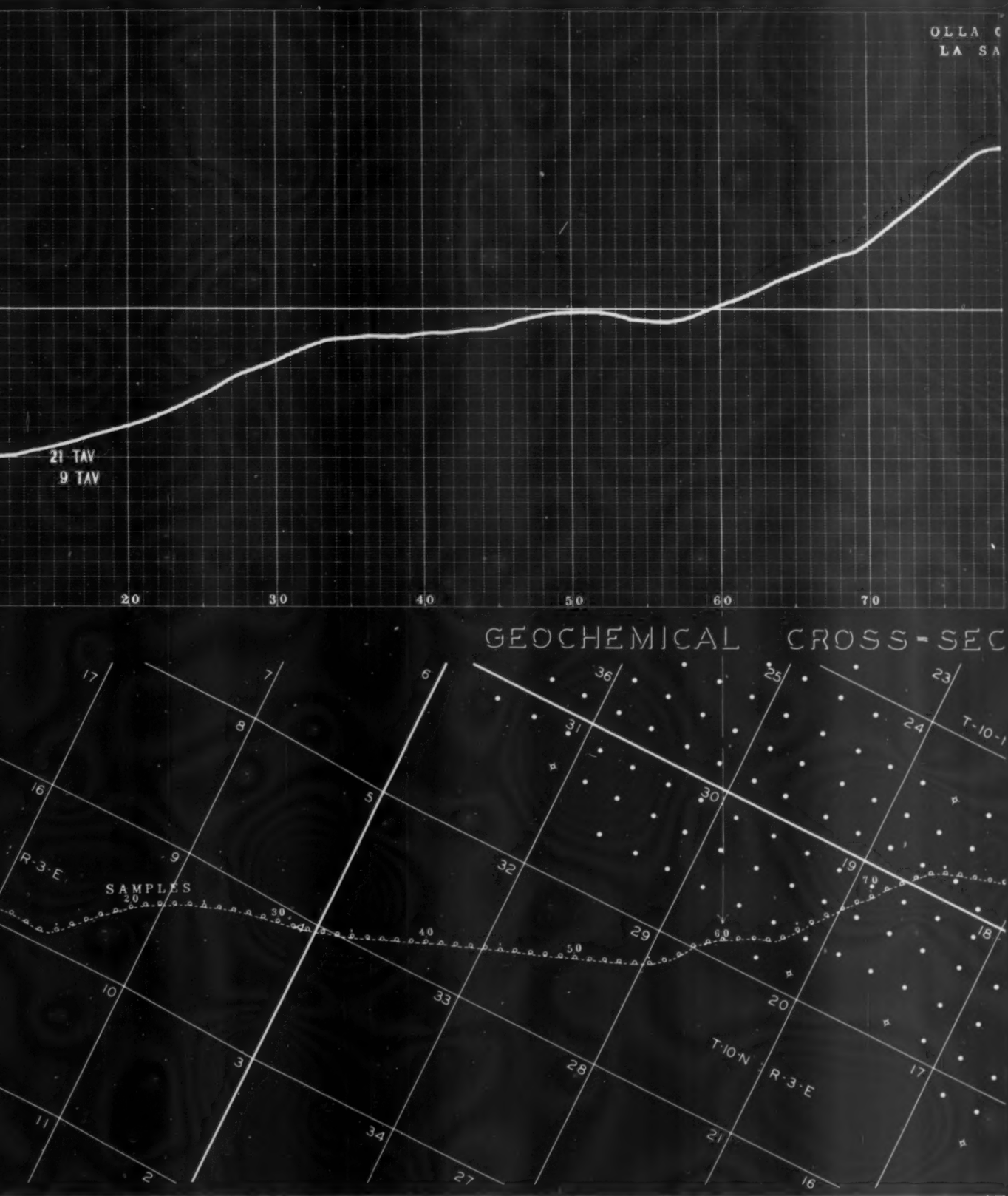
VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

Any unauthorized use of the processes covered by our patents will be vigorously prosecuted.
Licenses under these patents are available.



CUT OUT HERE FOR YOUR FILES

This is a demonstration survey across a know
Olla Oil Field, La Salle Parish, Louisiana. The l
were taken ten to the mile.



THIS IS HOW OIL IS FOUND

s a known oil field, the
a. The line of samples

The two arrows extending downward from the graph represent edges of the field, samples 60-90. The maxima-maximorium in this case is definitely over the oil on a 13-mile line.

In
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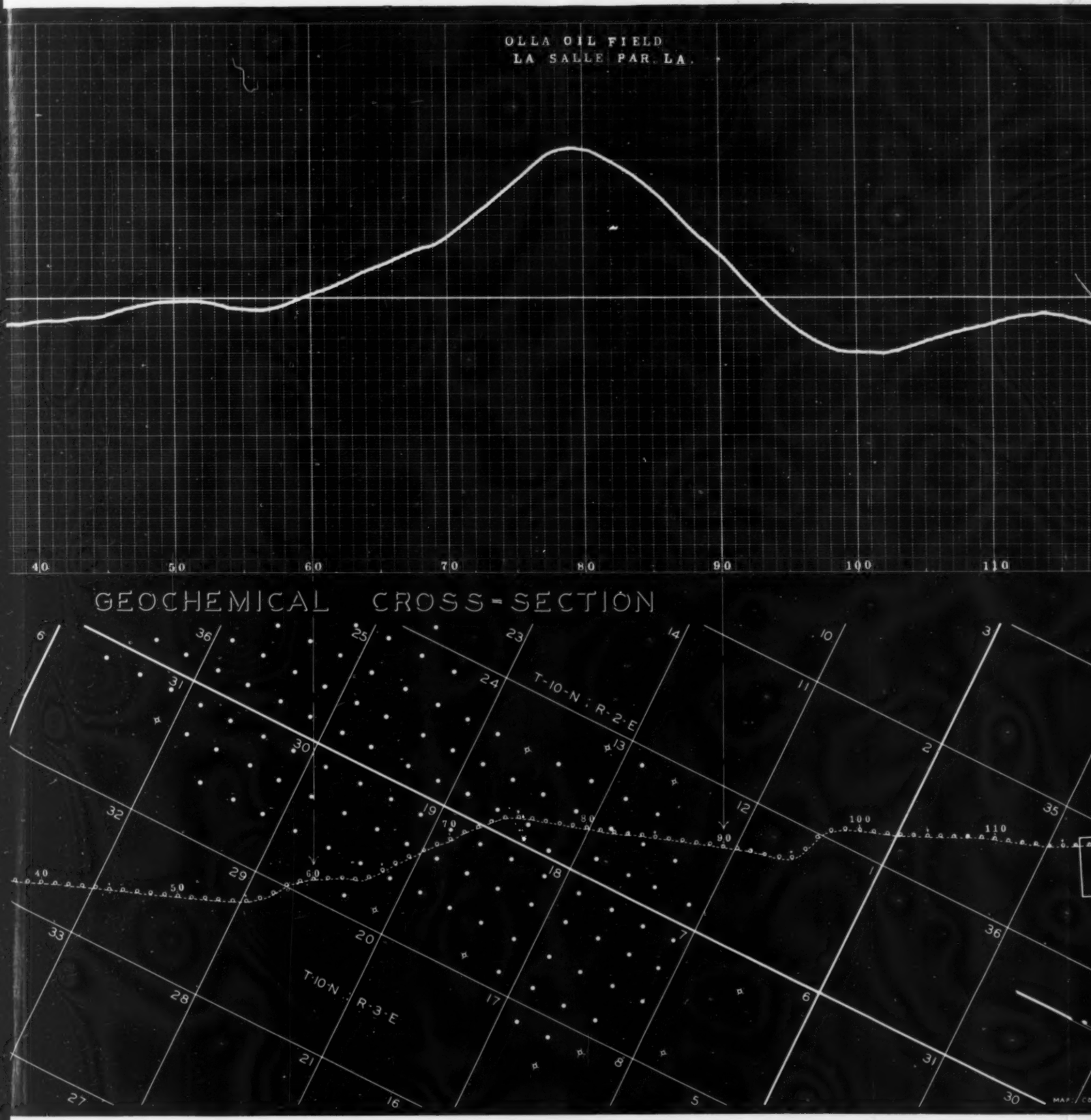

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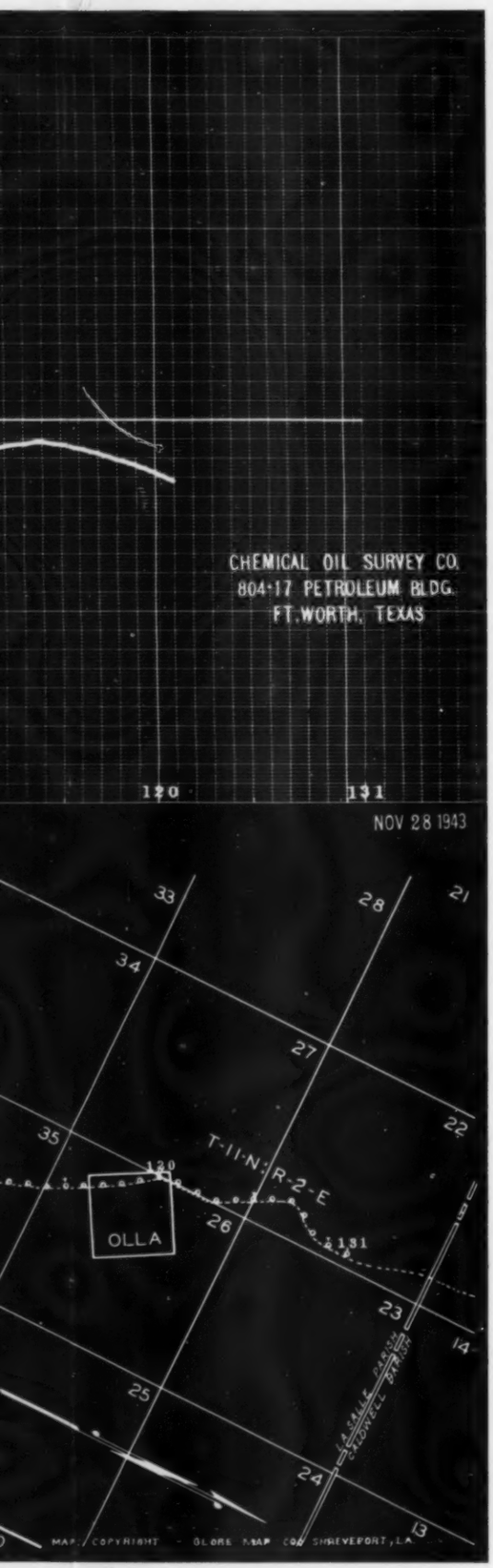
In most cases the oil may be indicated by an "isolated high";
However, "isolated lows" or "halos" . . . or more rarely . . . "halos
within isolated lows" are found to produce oil.



d high";
. "halos

GEOCHEMISTRY
FINDS OIL DIRECTLY

GEOCHEMISTRY has had a rough and rocky road and the several variables and little known facts regarding its application have caused "bugs" a-plenty! But the fact that the first automobiles were more like balky mules than the dependable transportation we know today didn't warrant a complete rejection of the principle involved. Neither did the fact that early day airplanes were considered dangerous cause their abandonment.

So the fact that, somehow, Geochemistry held within its grasp the key to the "direct finding of oil" has warranted the continuous research given to its proper application!

Our experience and research have paid well in more exact results in the

"DIRECT FINDING OF OIL"

which has resulted in detailed studies of "vertical effusion" as distinguished from "torsion fracture patterns."

We are definitely proud of our modern surveys... typified by the chart at the left... that show the oil, where the oil IS, and show nothing but the oil. With all the modern improvements in application and interpretation of Geochemistry it is continually being demonstrated that inadequate work is definitely fatal to results and is the cause of much improper appraisal of Geochemistry. Adequate and pretentious surveys are, however, definitely successful and profitable.

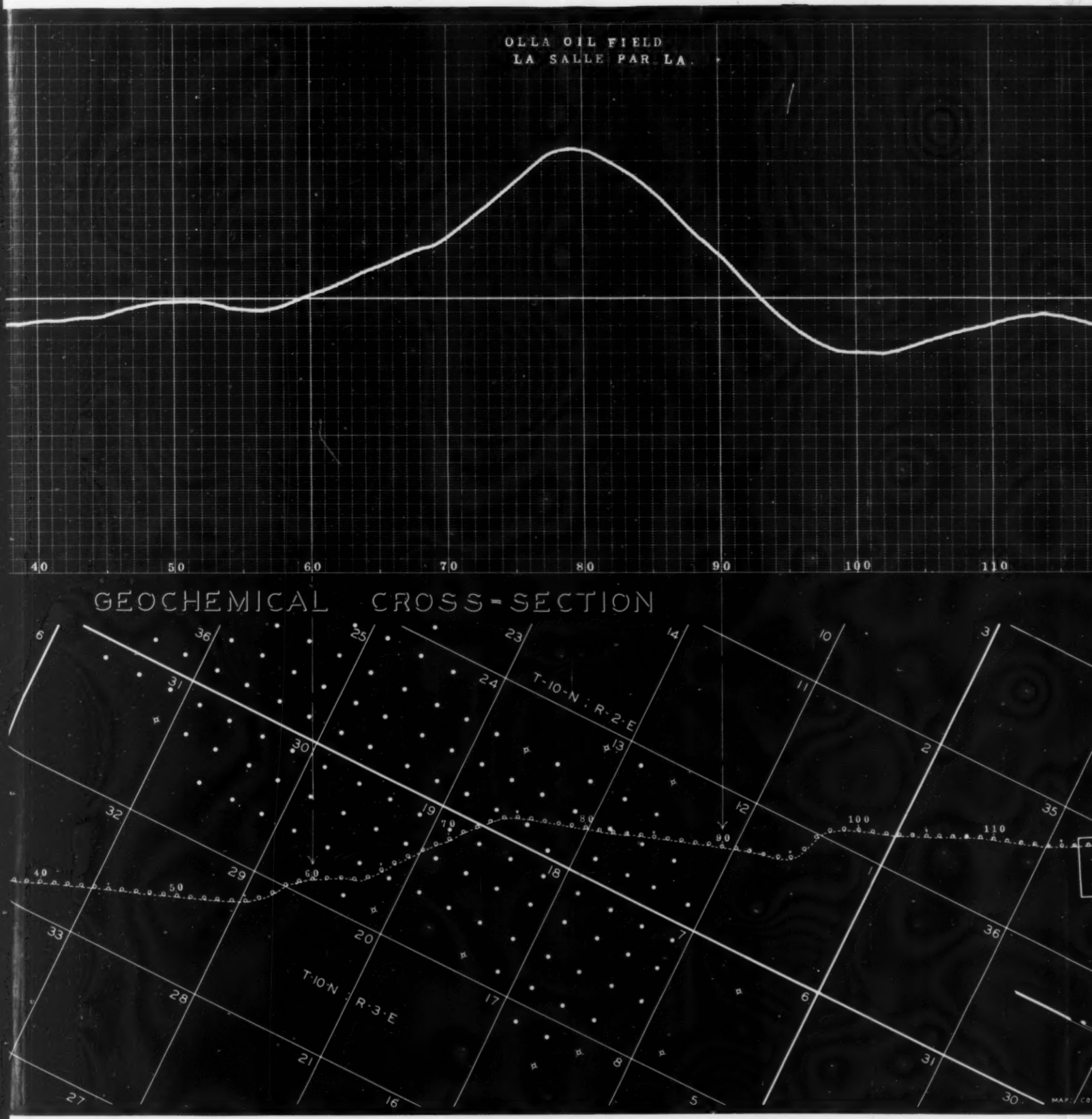
The use of crews on a monthly basis is recommended.

FOREIGN
DOMESTIC

COSCO

CREWS
BY MONTH

CHEMICAL OIL SURVEY
PETROLEUM BLDG. *Company* FT. WORTH, TEXAS



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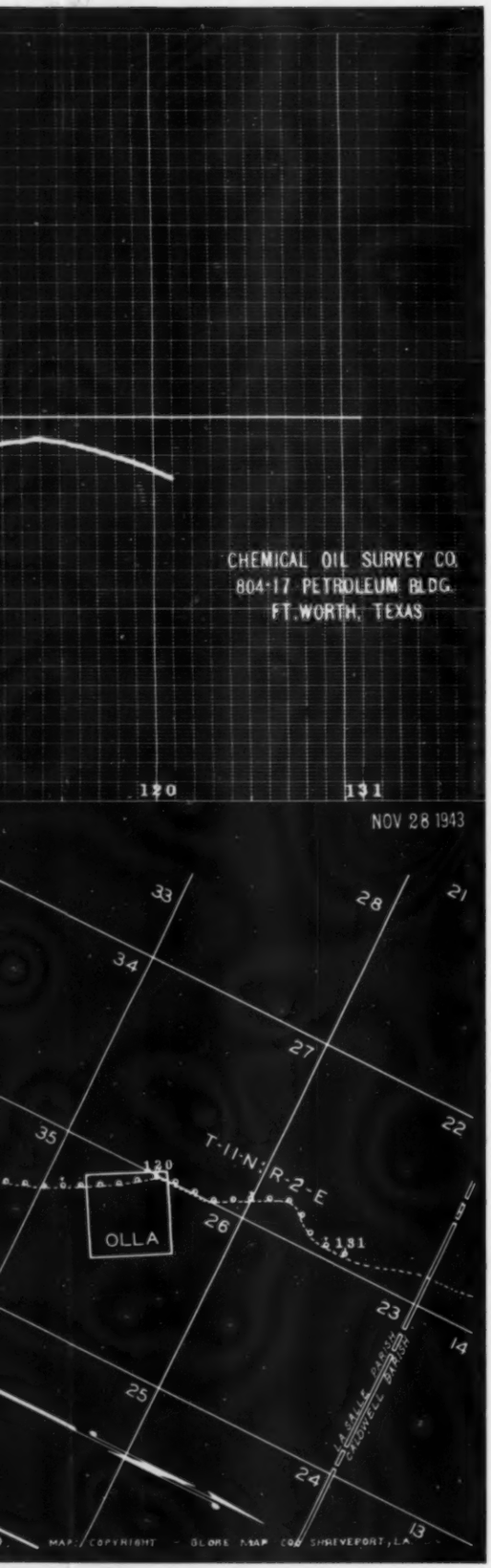

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FOREIGN
DOMESTIC

COSCO

CREWS
BY MONTH

CHEMICAL OIL SURVEY
Company
PETROLEUM BLDG. FT. WORTH, TEXAS

Drilling deep below the surface through sand, shale, and rock . . . where the twist of the bit and continuous "round-trip" place a tremendous strain on the whole drilling assembly . . . that's a man-sized job for any man's equipment: That's where the "built-in" characteristics of your drilling equipment give security against breakdowns, provide long uninterrupted runs.

Emsco builds a complete line of oil field drilling equipment—equipment built to stand up under all normal drilling operations with plus values built-in to take the abuses of shock loads when the going is tough. The Emsco line includes complete drilling rigs, draw works, crown and traveling blocks, swivels, rotary tables, slush pumps, derricks, chain, pumping units, and other drilling products. All are uniformly dependable in the service for which they are designed. All, in combination, give you a drilling design which is hard to beat.

EMSCO

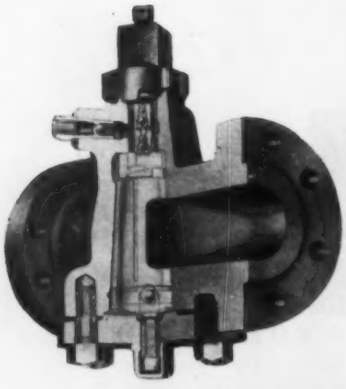
ARMY (E) NAVY

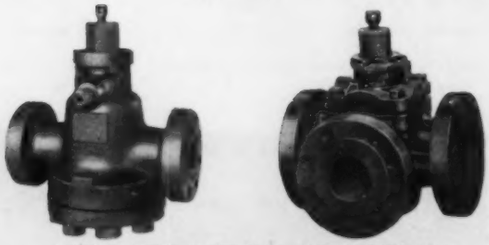
DALLAS PLANT

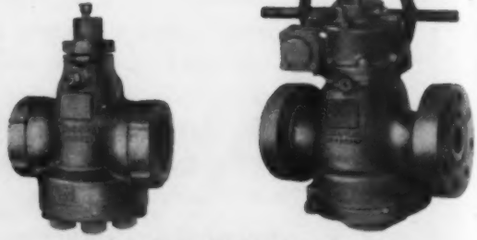
EMSCO DERRICK & EQUIPMENT COMPANY

HOUSTON, TEXAS • LOS ANGELES, CALIFORNIA • DALLAS, TEXAS

"But *this valve will do the trick because it's* lubricated"







AUDLEY ENGINEERING COMPANY, LTD.

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LUBRICATED VALVES

Like most people these days, we find ourselves spending a lot of time on problems which affect the war effort in some way or other. But we don't want to make a fuss about that. It's true that our method of moulding brake linings on cylindrical drums has been of great service to the aircraft industry, and by finding a way of cementing friction material to metal without using rivets or similar means of fastening we made ourselves very useful to certain people who make superchargers for aircraft engines. In the belting field, as well, we've kept a jump ahead of developments, particularly with woven endless belts, which are a cure for many industrial headaches. The point is that when it comes to belting of all kinds, asbestos products, friction materials, brake and clutch linings, packings or jointings we're not just manufacturers. If you use any of these things you'll find that we've got the answer to most of the problems which crop up from time to time and if we haven't, well . . . we like hard nuts to crack.

BRITISH BELTING & ASBESTOS LIMITED

CLECKHEATON (YORKS) AND LONDON

Spinners, weavers and manufacturers of Asbestos yarns, cloths, tapes, packings and jointings; manufacturers of Machinery Belting for all industrial purposes; manufacturers of "Mintex" Brake and Clutch Linings and other friction materials

BACKGROUND FOR WORLD OIL COMPACT

(*Continued from page 35*)

At first, the Coffee Agreement was silent on the price to be obtained on the United States market, on the theory (followed in the Sugar Agreement) that when supply was adjusted to demand the price of itself would seek a "normal" level. However, some of the Latin American countries had the bright idea of prohibiting the export of any coffee that was bought in their ports at a price less than what was, in their one-sided judgment, sufficiently remunerative. This unilateral fixing of price was overthrown by the United States Food Administration, which insisted that the Agreement be modified to include a proviso that the "ceiling price" on the United States market be regulated by agreement among the contracting nations, with the United States, as the importing country, holding the power of veto. Thus the principle that the consuming nations shall have an effective voice in the distribution of an international commodity was again vindicated. In the end, the Inter-American coffee trade has acquired a structure that is integrated both as to production and price all the way from a Brazilian *fazenda* or a Guatamala *finca* to the shelves of a food shop on the East Side of New York. Each producer, small or big, is assured his share of the business and of a reasonable price for his product, and every consumer may find what satisfaction he can get in reflecting that, although the price he pays is not as low as might be set by unrestricted competition, he is contributing to raise the general level of prosperity that will have a favorable effect even upon him. Although at present the operation of the coffee agreement is restricted to producing and consuming areas outside the theatres of war, arrangements have been put in readiness for its world-wide extension at the close of hostilities.

The foregoing is a compressed presentation of the world's erperience with inte‹government commodity control to date. What does this experience suggest in the way of an international control for petroleum?

Half of the existing international controls, with their one-sided decisions and their overriding of the consuming interests, have all the connotations that have made "cartel" a detested word. It is unlikely that the world will freely consent to having its international housekeeping subjected to regimes typified by the tin, rubber and tea agreements. The text of the beef agreement is too nebulous to have much significance.

There remain the three agreements to which the United States is a party; the Draft Wheat Convention, the International Sugar Agreement, and the Inter-American Coffee Agreement. These compacts have oriented world economic cooperation on new lines that have far-reaching implications. In the first place, the tyranny of one-sided cartels has been repudiated. The conditions under which a world commodity is distributed are not left exclusively in the hands of those who happen to be in possession of the means of production. The consuming and the producing interests mutually concede to each other equal powers in arranging these conditions. Being possessed of equal powers, they inevitably arrive at decisions acceptable to both.

It will be noticed that the whole context of these agreements centers around two points which all the parties have recognized as of capital importance. First and foremost is the matter of price. In all cases it is agreed, in the end, that the price must give the producer a reasonable return. The attitude of the consuming interests in helping to determine what this price shall be is especially worthy of note. Instead of insisting that the price shall be as low as possible, the consuming interests have come to see their advantage in paying prices that will enhance the buying power of the producers, which in turn stimulates the movement of goods produced by the consumers themselves. Liberality in trade has a two-way action.

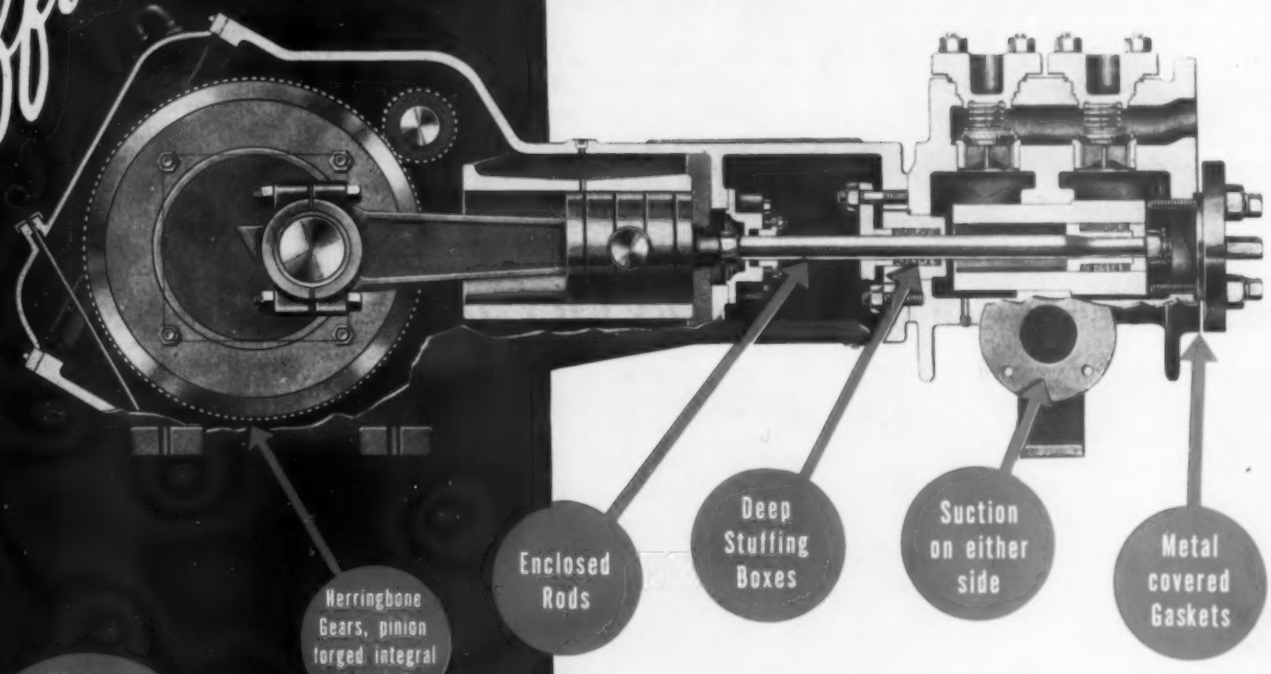
Equally worthy of note are the means adopted for assuring that all the producers, big or little, shall participate equitably in the proceeds of the price which the consumers have agreed to pay. This is accomplished by assigning national quotas, which in turn are subdivided proratably among the individual producers in each country. Every man is thus given an assured claim to his share of the business.

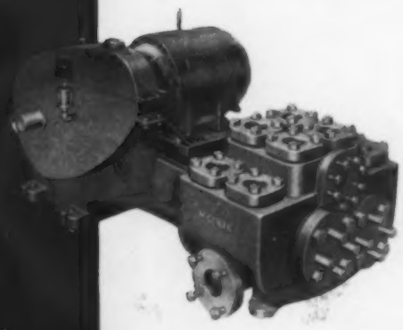
In passing, attention may be directed to a coincidence. President Roosevelt is one of the principal authors of the Atlantic Charter, which he later complemented by a "new bill of rights". One promise contained in these documents is that all nations, great or small, shall be given equal access to the markets, and to the raw materials of the world. In this connection it may be noted that the Roosevelt Administration has had a principal role in the framing and subsequent maintenance of the Draft Wheat Convention, the International Sugar Agreement and the Inter-American Coffee Agreement which, for all intents and purposes, are intended to assure to all nations, great or small, equal access to the world's markets for the sale of the products of the three basic industries. This has been accomplished by integrating world industries all the way from the primary producers to the ultimate consumers. Mr. Roosevelt has never publicly mentioned the specific means by which equal access may be implemented, but these agreements apparently show what might be expected.

Another phenomenon associated with these agreements should be by no means passed over. It is the very fact that such world-wide agreements have been possible. It is little short of marvelous that great national bodies of producers and consumers in countries scattered all over the face of the earth could be induced to harmonize their conflicting interests, and by an intricate process of give and take, put the principle of live and let live into effect on a world-embracing scale. The explanation can only be that the great majority of men of all countries are basically fair minded, and are not too much disposed to assert their own desires to the disadvantage of others, when these others show a like spirit. Apparently, all that is needed is a plan that is obviously fair to all concerned.

Turning to the subject of what the existing intergovernment commodity controls have to suggest in the way of an international oil compact, we have to note that oil presents a condition that is qualitatively different from those out of which the wheat, sugar and coffee controls have emerged. In the case of those commodities the producers took the intitiative to secure relief from conditions arising from overproduction for unregulated markets; the object sought was to remove this condition and assure all producers equal access to the world market for the sale of their products. In the case of oil the shoe is on the other foot. The condition now complained of is not overproduction, but underproduction; the world is held to be on its way to facing a shortage of oil. There is disagreement on this point but it seems to be the accepted basis from which most of the discussions have proceeded. If correct it would seem to be up to the consuming nations to take the initiative and demand an organization of the world oil market that will put into effect that other commitment of the Atlantic Charter—equal access to raw materials. Although the condition is thus qualitatively different, the same principles will apply. The world's goods, whether over or underproduced, are equally the concern of consumers and producers, and both may have equal voice in determining their production and distribution. The three international commodity controls to which the United States is a party have shown that such matters, however intricate and far-flung they may be, are capable of settlement to the general satisfaction of all. The essential condition is that all producers shall be assured of their proportionate shares of the business, and that consumers be willing to pay a remunerative price. In the case of oil, the chief concern will be to arrange for an equitable distribution of a limited supply among the consuming nations, so that no nation can be able to claim more than its fair share. Administration of an oil agreement will require the creation of an International Petroleum Council on which every producing and every consuming interest, official or industrial, is represented, with the consuming and the producing interests separately invested with a veto power over arbitrary actions on the other side. The Council will need full authority to stimulate exploration for oil wherever it may be found, and to control its distribution on lines laid by an International Petroleum Agreement.

efficient McGOWAN PUMPS


Enclosed Rods
Deep Stuffing Boxes
Suction on either side
Metal covered Gaskets
Herringbone Gears, pinion forged integral with shaft
Timken Roller Bearings on pinion and crankshaft main bearings are easily adjustable as weight of gear and crank is in housing separate from adjustable cap



McGowan Power Pumps are heavy duty designs, engineered for dependable Oil Field Service. The power frame is heavily ribbed iron casting; the liquid end is made from very fine grained, controlled cast iron. Gears are continuous tooth herring bone, and pinion is forged integral with the shaft, which extends to both sides for connection to driver. Pinion shaft floats on double row Timken roller bearings while the crank shaft also turns in Timken roller bearings. Crank bearings are adjustable by means of shims, and this cap does not support the weight of the bearings, the crankshaft and gear, as these are supported in a separate housing, purposely made larger for easy insertion of these moving parts. Consequently this pump is easily dismantled.

The liquid piston rod can be removed from the back of the crosshead by removing piston rod cover and stuffing box in power frame.

The liquid end is a duplex side pot type with a suction on either side. The valve areas are ample and pot caps are sealed with metal covered gaskets, the same construction as used in cylinder heats. Liners are removable. Liquid ends of these models are available in commercial alloys depending upon requirements.

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McGOWAN PUMPS

LEYMAN MANUFACTURING CORP.

The JOHN H. McGOWAN *Co.* DIVISION

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NEW CHEMICAL PLANT

J. OOSTERMEYER, executive vice president of Shell Chemical Division of Shell Union Oil Company, has announced that the War Production Board has authorized construction of an allyl chloride and allyl alcohol plant at Houston, Texas. Construction will begin at once. While allyl chloride and allyl alcohol will have many interesting uses in the synthetic chemical industry, it is expected that immediate application of the output of the new plant will be in the field of plastics.

JACALITOS DISCOVERY WELL

TIDE WATER ASSOCIATED OIL COMPANY, early in July, announced completion of Jacalitos discovery well No. 27-16 located at the Northern end of the San Joaquin Valley, just south of Coalinga, Fresno County, Calif.

The new well is flowing at the rate of 1478 barrels per day of 33 deg. gravity oil, with no water, through a 28/64 inch choke from a total depth of 3827 feet. The company owns in fee in excess of 2,000 acres in the vicinity of this well.

CAN-MAKING PLANTS

(*Continued from page* 44)

Additional Army-owned plants, of the type sent to the Middle East are in process of construction in this country for use at undisclosed overseas locations, it was revealed at the Office of the Quartermaster General.

In most instances, the plants are staffed by native labor, insofar as possible (see illustrations), under the supervision of Army personnel trained in the operation of such plants as well as in the petroleum industry. In addition to these Army-operated plants, British can manufacturers are now, and were for some months prior to the invasion of France, furnishing all the containers necessary for use by troops in that country and made many of those used in the invasion.

Early in the war, many thousands of gallons of petroleum products were shipped abroad in 55-gallon drums, from which they were pumped into "blitz" cans, and in some instances the products were shipped in the cans. In the Sicilian invasion, however, it was found that once a beachhead is established, tankers may be brought up a short distance offshore and their cargoes pumped into quickly erected storage on the beach, from which they may be easily bled into the "blitz" cans which accompany the fuel-using vehicles right up to the front.

The new policy permits the less costly shipment of petroleum products in bulk across the ocean, their transportation up to the front of the communication zone by tank car, truck, in tankers or by pipelines as the fighting moves inland, and the loading of products into locally manufactured cans and drums as near the theatres of action as practicable, thus eliminating much forward and backward shuttling of containers.

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Stevens Precision-Built Gaskets go into vital installations wherever oil is produced. They are the vital seal for maximum performance. This is the only plant manufacturing metal-asbestos filled gaskets West of the Mississippi—closest to the source of supply for every Western need.

Gaskets of Copper, Aluminum or other metals.
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We can build any size or type gasket—
you furnish the drawing or template.

STEVENS Ring Type Cylinder Head Gaskets. Guaranteed not to blow-out or cylinder head gasket made for any gas burn-out under high pressure. The best engine your money can buy — not a critical material.

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In connection with projects approved by the Foreign Division of Petroleum Administration for War, our associated companies require experienced men in the following categories, for service in their fields in Venezuela and Colombia:

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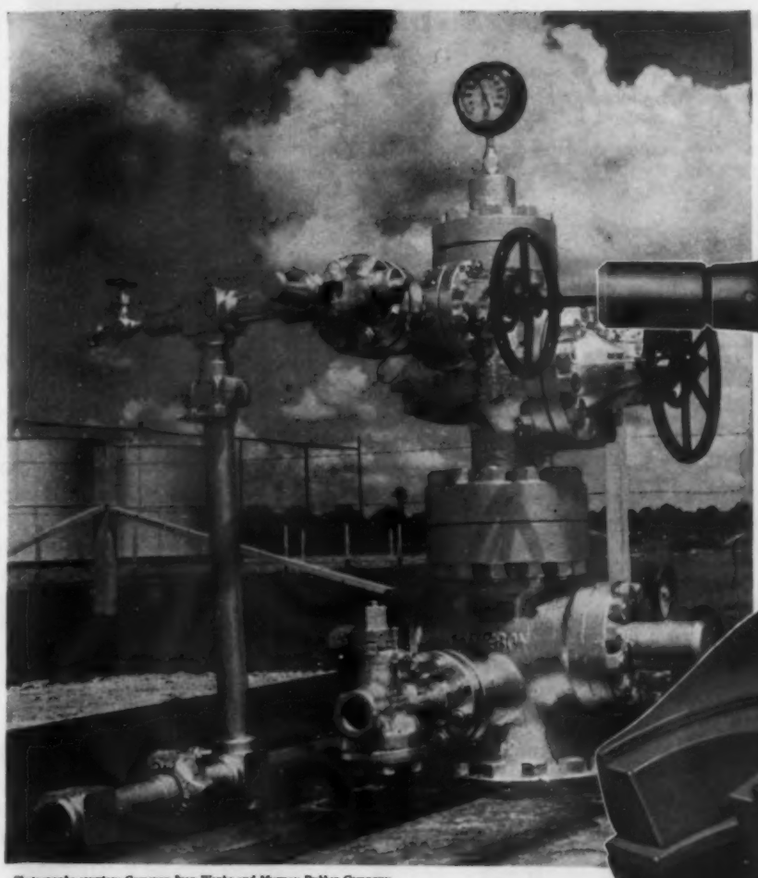
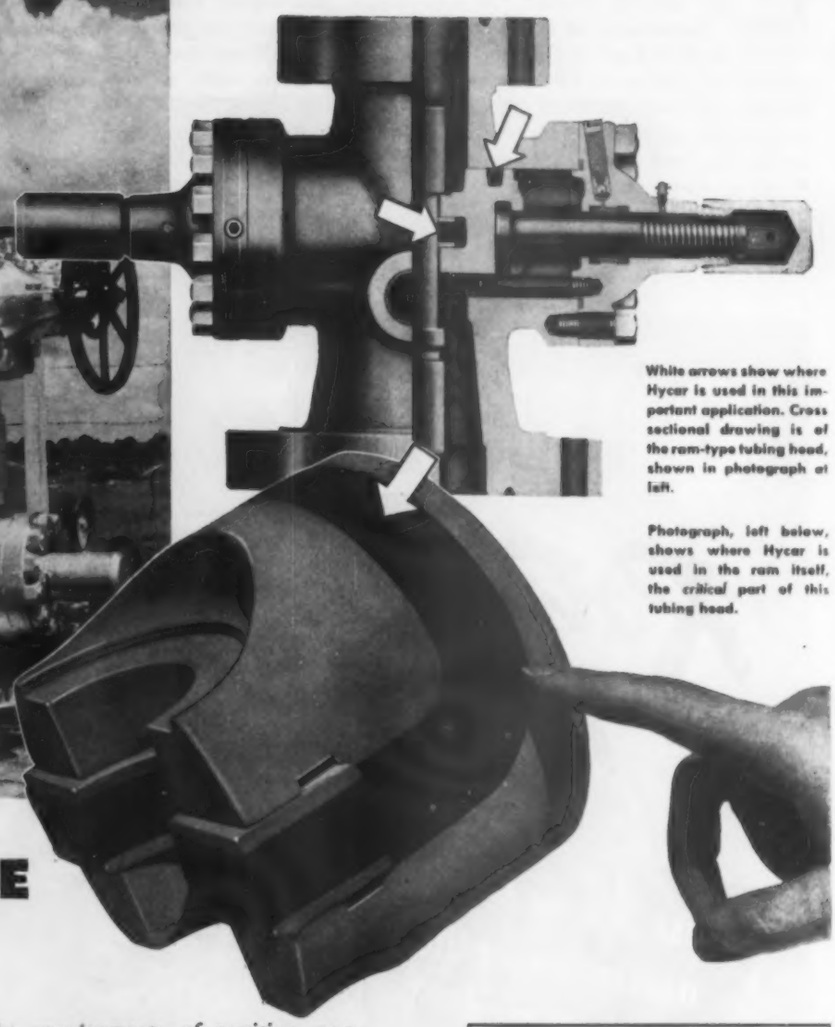
- Geologists
- Seismologists
- Seismograph & Gravimetric Survey Party Personnel
- Surveyors
- Petroleum Engineers
- Drilling Foremen
- Production Foremen
- Automotive Operation & Maintenance Superintendent
- Hydrographic Surveyors with Marine experience
- Storekeepers
- Labor Supervisors
- Geological Draughtsmen
- Camp & Commissary Overseer (Camp Boss)

It's a real opportunity for men with vision and initiative.

Applications may be made in person or by letter to Asiatic Petroleum Corporation, Room 1022, 50 West 50th Street, New York 20, N. Y.





White arrows show where Hycar is used in this important application. Cross sectional drawing is of the ram-type tubing head, shown in photograph at left.

Photograph, left below, shows where Hycar is used in the ram itself, the *critical* part of this tubing head.

Photographs courtesy Cameron Iron Works and Murray Rubber Company.

HYCAR CAN HANDLE CRITICAL JOBS

FROM the moment an oil well is completed, it is up to the seals in the tubing and casing heads to hold against oil and gas pressure, sometimes as high as 5,000 pounds per square inch. If the seals deteriorate and "leakage" results, expensive wild-well capping may be necessary.

To handle these critical jobs of leak-proof sealing, engineers of the Cameron Iron Works selected Hycar synthetic rubber for the sealing material in their ram-type tubing heads and casing heads. This packing material for the rams and casing head seal rings is made with oil-resistant Hycar by the Murray Rubber Company to satisfactorily meet the requirements of positive, non-deteriorating, long-lasting seals.

And this is just one of many examples of how Hycar—with its superb resistance to petroleum products, and to heat, its high abrasion resistance and its high tensile strength—can handle critical assignments efficiently.

Ask your own supplier to furnish you parts made of Hycar for actual tests in your own critical jobs. Find out for yourself what Hycar can do to help you meet these tough problems. *Hycar Chemical Company, Akron 8, Ohio.*

WHAT HYCAR DOES IN TUBING AND CASING HEAD SEALS

1. Resists oil and gas under high pressure.
2. Offers high elasticity.
3. Does not adhere to steel.
4. Wears very slowly even under worst conditions.
5. Relatively stronger than other materials.
6. High resistance to compression set.
7. Excellent resilience.
8. Proved performance by actual field tests.

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Synthetic Rubber

Correct pronunciations and meanings of commonly used synthetic rubber names and terms are given in the new pocket-size Hycar Glossary. Write for free copy.

FREEDOM BUYS CONTROL OF VALVOLINE

THE acquisition by Freedom Oil Company, Freedom, Pennsylvania, of a large majority interest in the Valvoline Oil Company, with headquarters in Cincinnati, Ohio, brings together two old and long-established companies in the Pennsylvania oil region. Announcement of this purchase has been made simultaneously by Earle M. Craig, President, and William G. Bechman, Executive Vice President of Freedom and G. P. Doll, president of Valvoline.

The original Freedom Company was started in 1879 and now operates its refinery at Freedom, Pennsylvania, and distributes its lubricating oil products under its own brands and the Pennsylvania Grade Crude Oil insignia, nationwide. Valvoline, originally established in 1866, operates a refinery at Butler, Pennsylvania, and distributes its products under its Valvoline trade mark in all states of the Union, in Canada and abroad in England, India and South Africa.

QUIMBY
Rotex Pump
These 5 new features assure longer life, increased efficiency
1. Double Helical Pumping and Timing Gears: Eliminate hydraulic thrust and assure smooth, quiet operation at relatively high speeds.
2. Timing Gears Located at Outboard End: Makes timing gears and thrust bearings more accessible without removing coupling.
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DRAKE MEMORIAL

(Continued from page 37)

familiar sight everywhere. In time he acquired a collection of oil field photographs, the most remarkable in the United States. Through the efforts of Edwin C. Bell, the Drake Memorial Association purchased the negatives for $100 after Mather's death. These negatives were a part of the Bell Collection which was placed in the Drake Museum in 1934. Altogether there are 3,274 of them in the Museum; of these 2,229 have been identified and labeled; and 1,045 remain unidentified. Some of the negatives have deteriorated, but most of them are still in good condition. These negatives constitute the most interesting and finest collection of contemporary views of the oil region to be found in this country. One might venture the statement that no other part of our country and no other industry has been so fortunate in having a photographer to capture contemporary events. New films should be made of these negatives as rapidly as possible; they are of glass and are easily broken; and the emulsion on the negative is crumbling.

On display in the Museum are all sorts of oil well tools such as rod elevators, tubing elevators, tubing tongs, pipe tongs, and wrenches. There are a few things, like the working barrel and wooden sills, which came from the Drake Well. Especially interesting are several miniature models of methods used to drill and pump early oil wells.

Since the middle of last year the Drake Advisory Board has embarked upon a program designed to develop the possibilities of the Drake Well Memorial to the fullest possible extent. It involves (1) the location and gathering of additional materials—maps, company records, newspapers, books, photographs, letters, diaries, lamps, oil well tools, pamphlets—relating to petroleum history; (2) the erection of a replica of the Drake Well on the site of the original well; (3) the making of an inventory of everything in the Museum and Library and the ultimate publication of a complete catalog; (4) the gradual reproduction of the Mather photographs in order that they may be permanently preserved; (5) the maintenance of the physical property in good condition; (6) the preparation of slides from original photographs for the purpose of giving illustrated lectures on the early development of the petroleum industry; (7) the dissemination of accurate and reliable information about the early history of the petroleum industry; (8) the maintenance of an interesting and attractive museum; (9) a modest publicity program designed to acquaint oilmen and the general public with the contents and value of the materials in the Museum and Library; and (10) the formulation of plans for the enlargement of the Museum and Library in the postwar period.

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has been extensively used for the covering of pipe lines, heat exchangers, condensers, etc., for almost half a century. No insulating material comes nearer perfection. It has an extremely low thermal conductivity, is light in weight and will maintain its efficiency throughout the life of the plant.

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STRIPPER SUBSIDY PUT INTO FORCE

OPA's long-awaited subsidy program for stripper wells—in lieu of the over-all price increase asked by the industry—has been announced to take effect August 1. The Premium Price Plan, as it is officially called, covers crude oil produced from fields averaging less than nine barrels per well a day and applies to some 900 such fields embracing nearly 300,000 wells—75 percent of the nation's wells, accounting for 12 to 15 percent of domestic crude production.

Although automatically applying to these fields, the plan opens the door for many other pools that produce in excess of the nine barrels per well a day. "Hardship" showings—excessive depths, high water-oil ratios—are entitled to consideration provided there is excessive cost and where cost of production "is not out of proportion to the output obtainable." It is expected that a considerable number of applications will be made for relief on such pools. Producers who consider that their pools qualify for the payments are directed to submit the necessary production and well data to OPA in Washington.

The basis of payment is the oil pool and it is the pool average per well that makes up classifications of the fields as to production and the amount of subsidy each is entitled to receive. The December 1943 production and the number of wells producing in each pool on December 31 of that year were used in making up the list of the 900 pools to which the plan automatically applies.

Pools in which the well average last December was less than five barrels daily will get 35 cents a barrel; those with wells of five barrels but less than seven daily get 25 cents a barrel; and those making seven barrels but less than nine will command 20 cents a barrel on their production. Reconstruction Finance Corporation, through its subsidiary Defense Supplies Corporation, is in charge of the program.

The big blanket exception to these scale payments is on oil of Pennsylvania grade, produced in Pennsylvania, New York, West Virginia and Ohio. Here the bonus is a straight-out 75 cents a barrel, regardless of well sizes and regardless also of any possible increases in production through secondary recovery or otherwise.

Also, there are other exceptions, production areas to which the plan does not apply automatically. One of the important exceptions applies to the small wells of California. Concerning this state and the wells in Alabama (few in number), Florida, Mississippi, Utah and Virginia (only Mississippi is of consequence among these four) the OPA said it lacked data on which to make its findings. However, producers thus excluded are invited to make application to OPA in Washington and state their case.

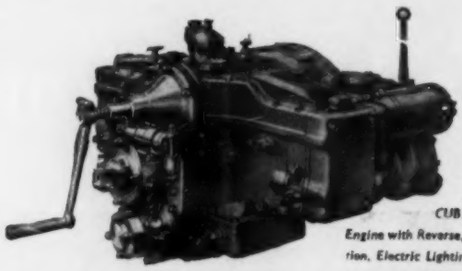
Operation of the plan calls for the first purchaser of the oil to add the amount of the "incentive" payment to the price he pays the producer. He then files a claim for reimbursement with Defense Supplies Corporation. How much of a "squeeze" it will be for some small refiners with limited cash to have funds tied up in this manner remains to be seen. Some mild objections have been heard. The seriousness of this objection would seem to depend on the length of time DSC will require to pay the purchaser's advance to the producer.

Officials say they "hope" it will not take more than a month to process a claim. They figure that they will not be required to draw more than seven or eight hundred checks a month. The thought is expressed that a refiner whose operations depend on the small amount of cash likely to be tied up even in a longer delay probably is in a shaky financial condition.

Royalty owners will share in the subsidy, along with the working interests. It is planned now

(*Continued on page* 68)

MARINE · STATIONARY · VEHICLE



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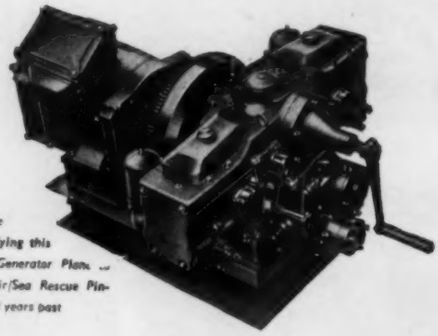

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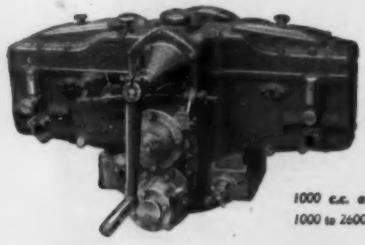

1000 c.c. and 1135 c.c. 2 cyls., 1000 to 2600 r.p.m., 300 lb. weight

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FUNDAMENTALS OF CIVILISATION

No. 5. POWER

Since the dawn of time man has endeavoured to utilise power to provide for his needs. In early times power was wrested from the muscles of slaves or from the patient ox. Medieval man harnessed the wind and water to turn his mills and grind his corn.

To-day the engineer makes use of a third element—fire and, with air and water, generates many thousands of horsepower in one place, whence it is distributed to do useful work at many distant points.

These modern miracles have been made possible by the special and alloy steels evolved to suit the complex conditions in the operation of high temperature water tube boilers, in the turbines and electrical generators. Electric pylons of steel stride across the countryside carrying the invisible current for conversion into power at the bidding of man.

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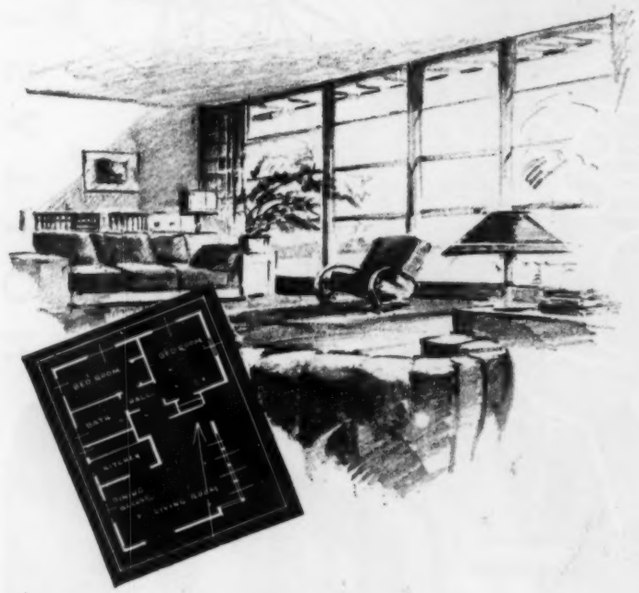
(R) U.S.P. 29

(*Continued from page 66*)

to establish field committees to help with certain phases of administration. The plan, of course, is limited to the current fiscal year, as all subsidies handled by OPA die next June 30 unless expressly authorized by Congress and appropriations specifically made for them. Oil men say that while they would have preferred a flat per barrel increase in price they are willing to go along with OPA on the premium plan and do what they can to make it work.

According to Fred M. Vinson, Director of Economic Stabilization, who after long delay and much discussion finally approved the subsidy idea: "By increasing the financial return of the operators of the stripper wells, the lives of the wells will be prolonged, expenditures can be made to improve their operating efficiency, shut-in wells will be revived, certain secondary recovery projects can be instituted, and a consequent net gain to oil production and to our total recoverable reserves will result."



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If you haven't already requested that we send you full details of our packaged plan for merchandising this prefabricated house, get your name in today. We'll send definite information as soon as possible in the order that inquiries have been received.

HOUSTON *Ready-Cut* HOUSE CO.

Prefabricators Since 1917

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VENEZUELA

(*Continued from page 29*)

The financial results of the new petroleum law have been eminently satisfactory to the Venezuelan government. President Medina stated in his annual message to Congress that although it had been estimated, at the time of the inception of the new law in April, 1943, that the increase of revenue from oil royalties would be 80.5 percent a year's operation has shown the increase to be around 88 percent. Also, the government had estimated that the petroleum companies would renounce 40 percent of the area of concessions which they held which would reduce the amount of taxes to be paid in converting them to the new law, but renouncements amounted to only 33.5 percent of the lands held.

During the legal conversion period 99½ percent of all properties held under former laws were converted to the new law, amounting to about 4,600,000 hectareas of exploitation lands and 1,300,000 hectareas of exploration lands. The government received about Bs.77,000,000 ($23,333,000) in taxes from the conversion of these properties under the new law.

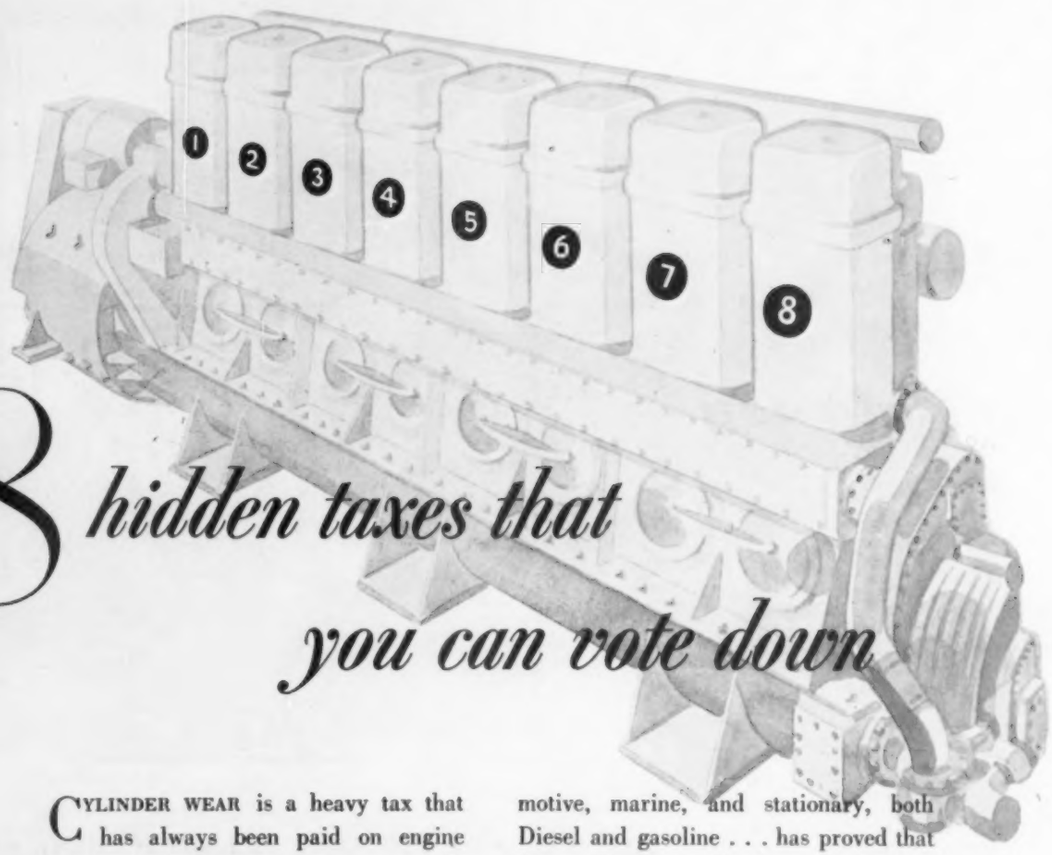
Through mutual cooperation the government and the companies have been attempting to solve some of the disagreements which have arisen under the new law on the subject of exoneration of duties for equipment and materials. The new law prohibits such exonerations but at the same time the Venezuelan customs duty law is so outmoded and incapable of equitable application to the oil industry that the oil companies have been penalized by being forced to comply with it.

The government has been at work for some time on the revision of the duty law to adjust inequities but the proposed new law has not been finished. In the meantime, in order to alleviate the situation, the government made special compromise agreements with the companies: namely, the Standard group, the Shell group, Mene Grande and Sinclair, so that during the past fiscal year these companies paid a total of Bs. 6,096,630.29 ($1,840,000) in duties. The Texas Company and the S. A. Petrolera Las Mercedes paid Bs. 11,711,183.15 ($3,500,000) under protest.

Venezuela's present oil production has hit a new wartime high of over 670,000 bbls. per day which brings it almost up to its prewar level. During 1943 production increased 20.5 percent over 1942.

LENHARD JOINS UNITED

PHIL J. LEHNHARD, for several years connected with the research department of Dowell Incorporated at Tulsa, and more recently District Engineer for Dowell in West Texas, is now associated with United Geophysical Company as a Petroleum Engineer.



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PORUS-KROME has incomparably greater resistance to wear and corrosion than any other cylinder surface. Produced by the Van der Horst process, it is hard chromium which has tiny pores or pockets that act as oil reservoirs.

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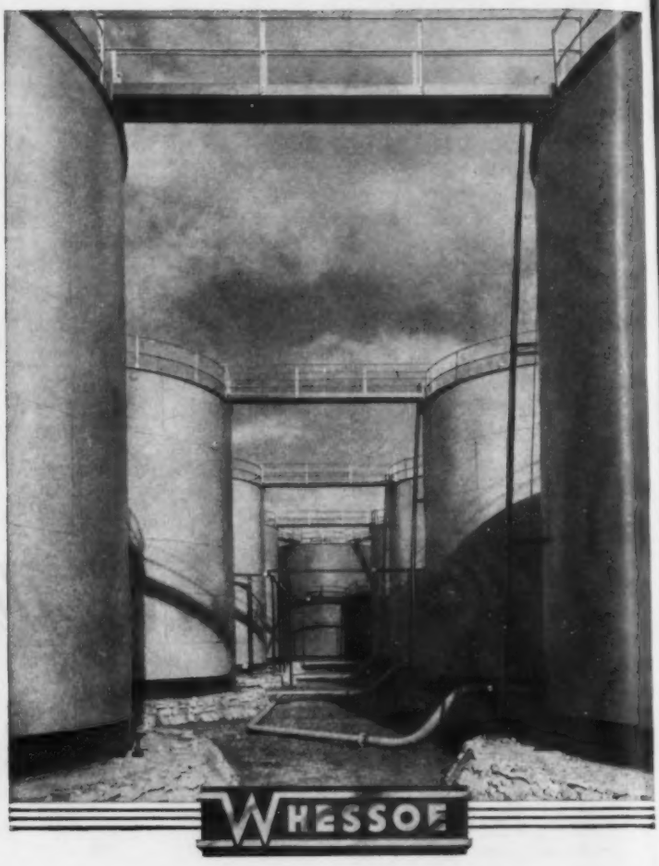

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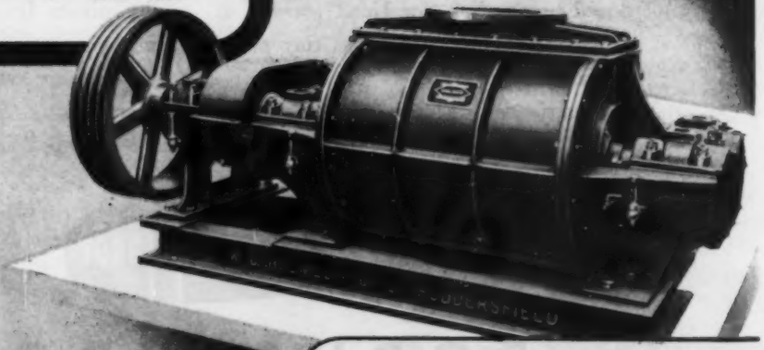

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Recently a large oil refinery required a 33-ft. diam. vacuum fractionating tower for its production lines. Specifications for this unit called for an operating range of from 15 lbs. per sq. in. vacuum to 30 lbs. per sq. in pressure and an operating capacity of 37,000 bbls. per day. This huge vessel was fabricated at one of our plants and field erected at the refinery.

The designing and fabricating of pressure vessels such as these can be handled efficiently in our plants where complete facili.ies for producing units to meet API-ASME specifications is complete in every detail. Write our nearest office when your production lines require welded steel pressure vessels.

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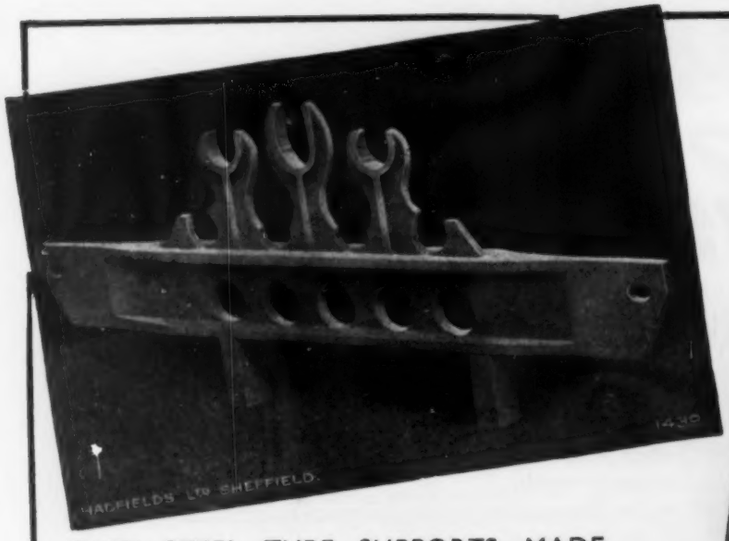

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FOR THE OIL INDUSTRY.

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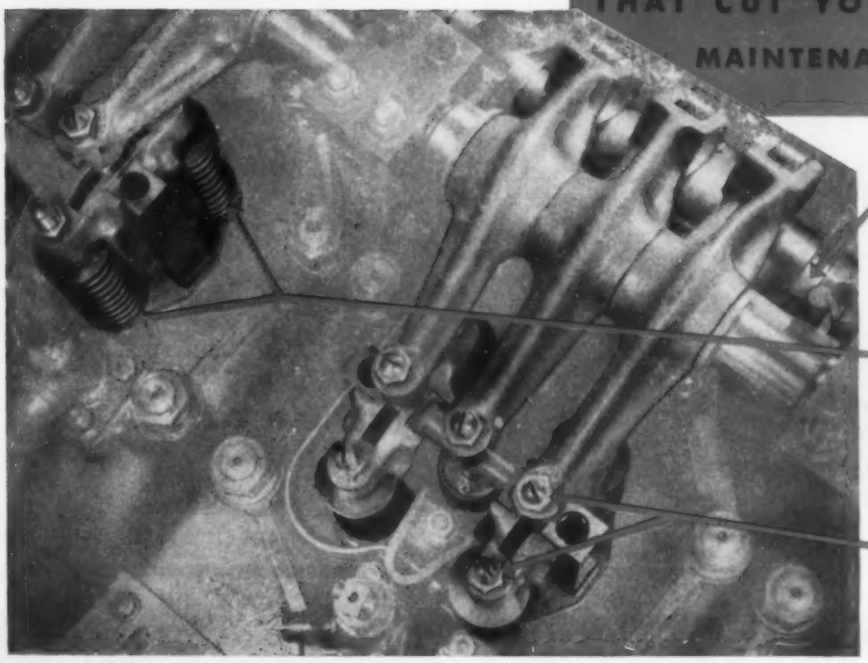
No. 7232

THREE HENDY FEATURES THAT CUT YOUR DIESEL MAINTENANCE COSTS



1. OVERHEAD CAMSHAFT

Reduces maintenance by eliminating parts and complicated linkage.

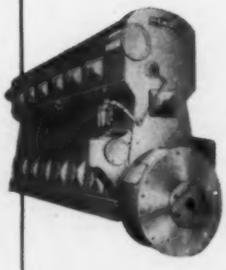
2. DIRECT-ACTUATED DUAL VALVES

Reduce maintenance by prolonging valve-stem and guide life.

3. HYDRAULIC TAPPETS

Reduce maintenance by eliminating manual tappet adjustment.

HENDY SERIES 50 DIESELS



Hendy Diesels—6 or 8 cylinders, from 350 to 675 hp—are designed for marine and industrial use—or with Hendy generators, as complete electric generating plants.

Write today for complete data, ask for the new Hendy Series 50 Diesel Engine Catalog.

These three features of the Hendy Series 50 Diesel contribute directly to the lower maintenance costs a successful Diesel operator expects and must have.

The overhead camshaft eliminates the linkage of push-rods and valve-lifters for each cylinder—cutting maintenance by reducing the number of wear points. The valve mechanism, pressure-lubricated through hollow rocker-arm shafts, lasts longer because positive-acting cross heads, or dividers, assure even pressure on dual intake and exhaust valves and eliminate side thrust. Hydraulic tappets automatically maintain correct tappet clearance at all times, making manual adjustment unnecessary.

Any one of these features in a Diesel is an aid to lower maintenance costs. But the Hendy Diesel has all three. Even more, the Hendy Diesel has many other advantages never before combined in a single engine. Investigate the advantages of this modern Diesel today.

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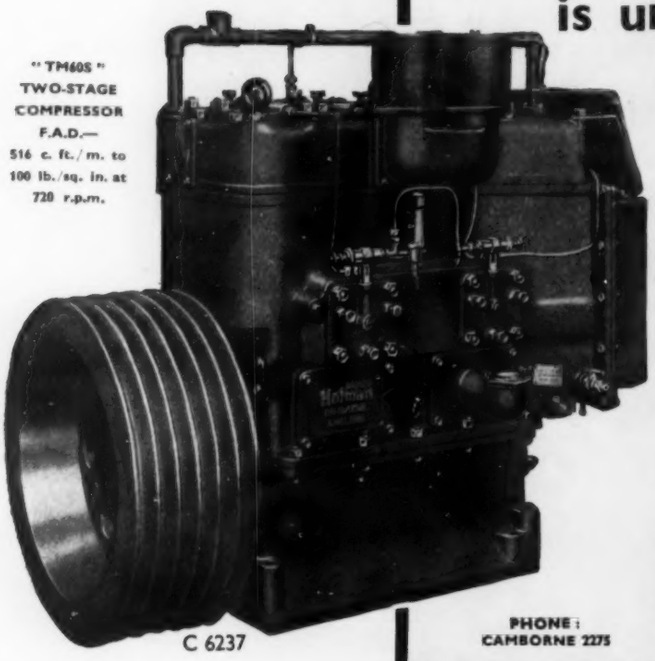

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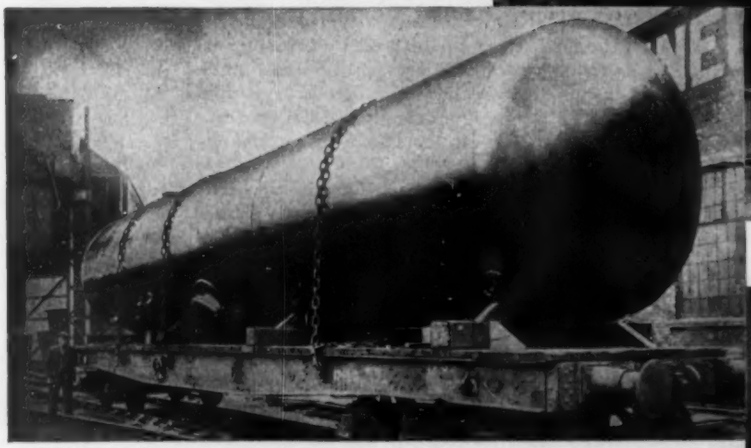
5' 0" & 6' 6" DIA. × 90' 6" TOTAL HEIGHT. Lloyds Survey & A.S.M.E. Code.



8' 0" DIA. × 39' 6" LONG. Test Pressure 450 lbs. Working Pressure 240 lbs. per sq. inch.

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PARKFIELD WORKS STOCKTON-ON-TEES

OIL COMPANY STAFF CHANGES

(Continued from page 46)

J. E. LINDROTH has been elected secretary of the executive committee of the Standard Oil Company (N. J.). A. C. Minton, secretary of the executive committee for the past eleven years, and also secretary of the company, will devote his full time to administrative matters in the latter post. Mr. Lindroth, who was also made an assistant secretary, had been assistant manager of the co-ordination department since 1933. He joinedthe company as an office boy in the manufacturing department in 1919.

Born in Brooklyn in 1904, Mr. Lindroth was graduated from public and high schools there, and later attended New York University School of Commerce. These studies were supplemented with company training courses. After six years in the manufacturing department, he was selected as an assistant to the manager of the co-ordination department in 1925. Eight years later he was appointed assistant manager. In 1944, he was a member of the technical committee which spent two months in Venezuela studying refinery sites and transportation facilities.

WILLIAM F. THIEDE, general superintendent of the Bayonne refinery of Standard Oil Company of New Jersey, has been named assistant manager of that company's New Jersey works. Stanley A. Wuchter, assistant general superintendent of the Bayonne plant, has been made general superintendent, and George A. Esty, former process superintendent at the same plant, succeeds Mr. Wuchter as the new assistant general superintendent.

The New Jersey Works, which includes the Bayonne, Bayway and Eagle operations of the company, is headed by George M. Mettan, manager.

Mr. Thiede started as a regular employee of the Standard Oil Company of New Jersey at its Bayway plant in 1912, after having worked there several summers. In 1926 he was appointed assistant superintendent in charge of atmospheric distillation and oil movements and storage, and was made assistant general superintendent at Bayway in 1936. Two years later he was transferred to Bayonne as acting general superintendent, succeeding to the full title six months later.

Mr. Wuchter began his association with the company December, 1920, in the general engineering department at Bayway. In 1922 he was transferred to the Bayonne engineering group and five years later was made assistant master mechanic. In 1936 he was made assistant to the general superintendent, becoming assistant general superintendent in June, 1937.

Mr. Esty, who has been process superintendent at Bayonne, joined the company in 1916. After two years in the Navy he returned to Bayonne in 1919 as foreman of the No. 3 refinery. In 1924 he was made foreman of the pitch plant and was transferred two years later to the No. 2 refinery. During 1927 he spent several months as a member of a company committee engaged in standardizing refinery operations. In 1928 he was made assistant process superintendent and in May, 1931, process superintendent. He has continued in that position with the exception of two years, 1932 to 1934, spent in surveying operations in Sumatra and starting the Port Jerome refinery in France.

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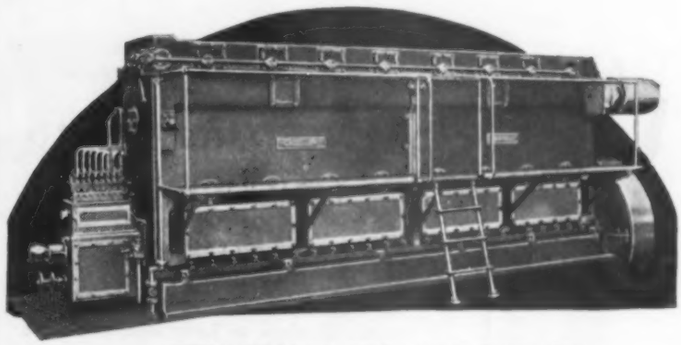

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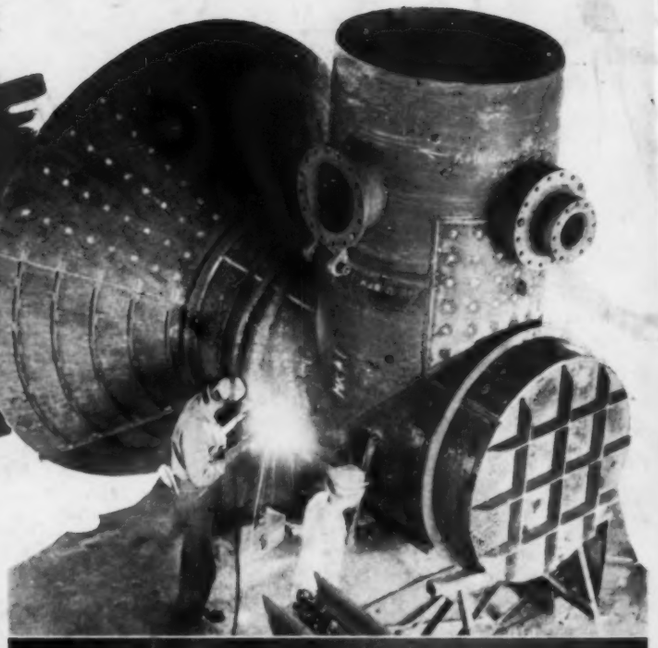
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